ARTILLERY TRENDS

ONE SUBJECT ISSUE

THE NEW INFANTRY DIVISION ARTILLERY

MARCH
1959

U S ARMY ARTILLERY
AND MISSILE SCHOOL

UNITED STATES ARMY
ARTILLERY AND MISSILE SCHOOL
Fort Sill, Oklahoma

9 March 1959

This issue of ARTILLERY TRENDS is devoted exclusively to the New Infantry Division artillery. It is intended to answer questions concerning the new organization and serves as a general guide until approved tables of organization and equipment and revised training literature are published. Also, it is hoped that this advanced data will assist units in preparing plans for conversion to the new organization.

The organizational structure and outlined procedures of the New Infantry Division artillery are being finalized for approval by the US Continental Army Command and the Department of the Army. Personnel and equipment numbers quoted in this issue were taken from draft copies of the tables of organization and equipment and are subject to change.

ARTILLERY TRENDS

CONTENTS PAGE

The New Infantry Division Artillery - - - 3
Organization, Personnel, and Equipment of the New Division Artillery- 7
Tactical Employment of the New Division Artillery - - - - - - - - - - - - 23
Battalion Five Volleys--Fire Direction in the New Division Artillery- - - - 38
Communications in the New Division Artillery- - - - - - - - - - - - - - - - 46
Target Acquisition in the New Division Artillery- - - - - - - - - - - - - - - 59
Survey Organization, Concepts, and Procedures- - - - - - - - - - - - - - - - 63
Meteorological Data for Predicting Fallout- - - - - - - - - - - - - - - - - 68
Vehicle Maintenance in the New Division Artillery- - - - - - - - - - - - - - - 70
Organization and Methods of Supply in the New Division Artillery - - - - - - - 72
New Small Arms for the New Division Artillery- - - - - - - - - - - - - - - - 77
Training Literature for the New Division Artillery- - - - - - - - - - - - - - - 82
Artillery Map Symbols- - - - - - - - - - 84

INSTRUCTIONAL AID NUMBER 9

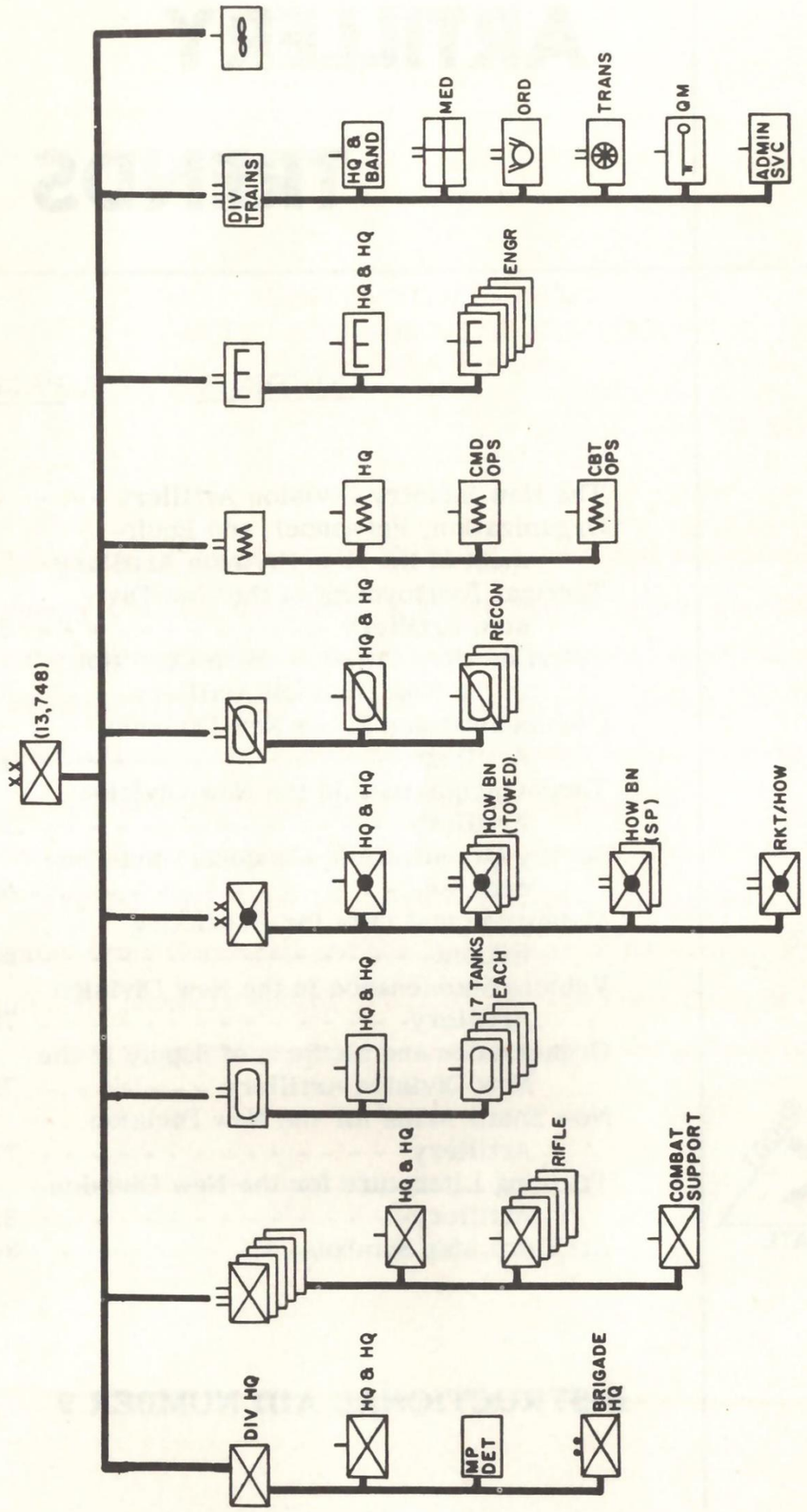


Figure 1. The New Infantry Division.

THE NEW INFANTRY DIVISION ARTILLERY

Lieutenant Colonel Arthur W. Knott
Department of Training Literature and Nonresident Instruction

The New Infantry Division artillery is a six-battalion organization. It includes 5 howitzer battalions (direct support), 1 rocket/howitzer battalion (general support), and a division artillery headquarters and headquarters battery.

For clarity, the new organization will be referred to throughout this issue of ARTILLERY TRENDS as the New Infantry Division or the New Division artillery. The present organization of active Army units will be called by its name--ROCID (Reorganization of the Current Infantry Division). The four-battalion artillery organization before ROCID will be referred to as the Triangular Division. National Guard and Army Reserve units still are organized under the Triangular Division.

ROCID, containing a two-battalion division artillery was implemented on an interim basis in 1957 without field tests. The ROCID concept represented the initial step in combining increased flexibility with a nuclear delivery capability. However, it became apparent that a change of organization was necessary if the field artillery was to effectively fulfill its mission and its vital role as an integral part of the infantry division. The need for a change was demonstrated by evaluations from field experience, exercises, recommendations from the divisions, and service school studies. Agreement was unanimous that increased flexibility, greater centralized control, and more responsiveness to the needs of the supported units were required. These three factors are fundamentals which govern the organization and employment of field artillery. Therefore, the New Infantry Division artillery is designed to correct the deficiencies of ROCID.

Pentomic Concept Retained

The pentomic concept, which combines five basic maneuver elements with a nuclear capability, is retained in the New Infantry Division (fig 1).

In addition to the artillery reorganization, the internal infantry structure of ROCID has been changed. One rifle company has been added to the battle group making the total five. The rifle company now includes a weapons platoon and three rifle platoons.

A new combat support company has been added to each battle group. This company will have organic combat support elements for the battle group including reconnaissance, engineer, assault gun, and heavy mortar platoons. The heavy mortar platoon consists of six 4.2-inch mortars. The field artillery mortar battery has been eliminated.

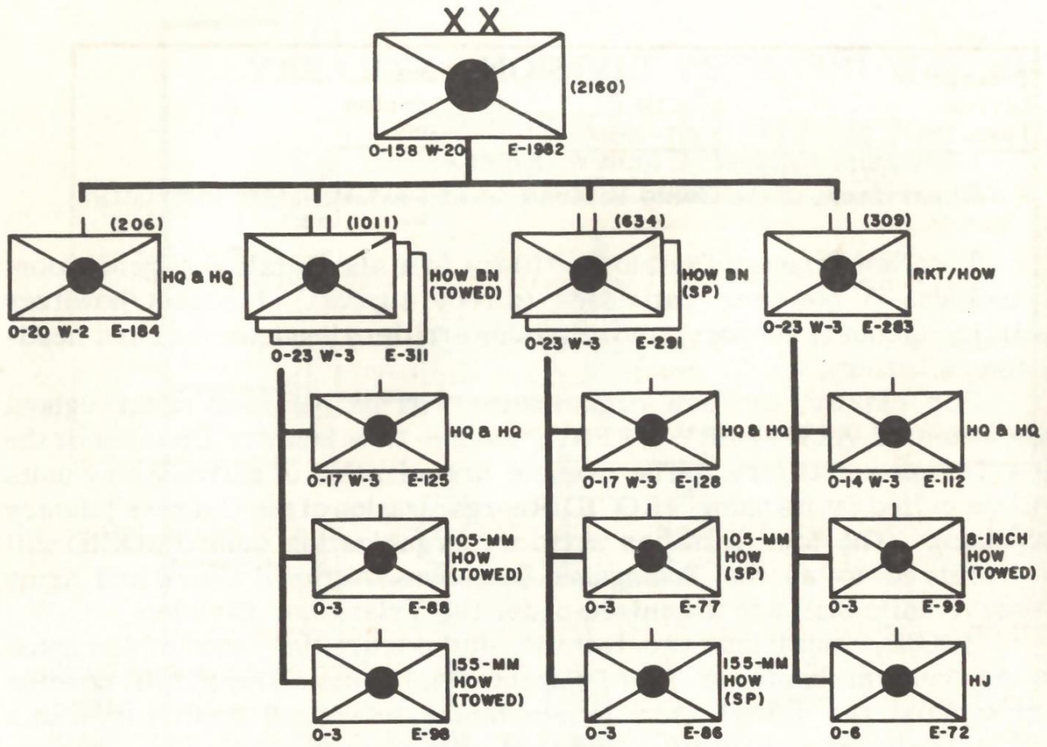


Figure 2. The organization of the New Infantry Division artillery.

Other changes are that each division will have a navigational system for controlling and directing the landing of Army aircraft, an aircraft field maintenance capability, a radiological center to predict nuclear fallout, and a ground radar section for each battle group. Although not organic to the division artillery, the division aviation company includes the artillery flight.

The Division Artillery

In preparing plans for the New Division artillery (fig 2) the US Army Artillery and Missile School considered the concept of the employment of battle groups, the target array, and the requirements for both nuclear and nonnuclear warfare. (Organizational charts and major items of equipment for each battery start on page 7.)

The five howitzer battalions can provide effective close support for each battle group under all conditions and can mass fires and maneuver under centralized control. Three of the howitzer battalions are towed units and the other two are self-propelled. Each battalion includes a 105-mm howitzer battery, a 155-mm howitzer battery, and a headquarters and headquarters battery. The composite organization of the howitzer battalion provides the heavier artillery support that is required at battle group level. Flexibility in tactical control, command, and liaison

Triangular Division 1940-1957	ROCID 1957-1959*	New Division 1959-
4 field artillery battalions:	2 field artillery battalions:	6 field artillery battalions:
3 105-mm bns	1 105-mm bn	5 direct support bns
1 155-mm bn	1 composite bn	1 general support bn
3 infantry regiments	5 infantry battle groups	5 infantry battle groups

*All dates refer to active Army divisions

Table 1. Comparison of the artillery and infantry elements of the infantry divisions since 1940.

is attained through the use of the artillery battalion headquarters.

Flexibility within the division artillery is further enhanced by the rocket/howitzer battalion consisting of one 8-inch howitzer battery (4 howitzers), one Honest John rocket battery (2 launchers), and a headquarters and headquarters battery. Both the 8-inch and Honest John batteries have a nuclear and a nonnuclear capability.

Tables 1 and 2 compare the artillery and infantry elements and the number of artillery tubes of the Triangular Division, ROCID, and the New Infantry Division.

Weapon	Triangular Division	ROCID	New Division
4.2-inch mortar	0	40	0 (30 w/Inf BG's)
105-mm howitzer (towed)	54	30	18
105-mm howitzer (SP)	0	0	12
155-mm howitzer (towed)	18	12	18
155-mm howitzer (SP)	0	0	12
8-inch howitzer (towed)	0	4	4
Honest John launcher	0	2	2
Total	72	88	66 (96)

Table 2. Comparison of the number of tubes in the infantry division artillery since 1940.

It may appear that the number of artillery weapons has been reduced in the New Division artillery; however, under ROCID, 40 of the weapons were 4.2-inch mortars. Therefore, from the artillery standpoint, the comparison is 48 pieces in ROCID and 66 in the New Division. From a

firepower standpoint, the comparison is 88 to 96 respectively, counting cannons, launchers and mortars. The additional 30 weapons are the 4.2-inch mortars now organic to the battle group support companies.

Self-Propelled Battalions Included

Speed and mobility were considered in developing the new organization. Organic self-propelled artillery is provided to support battle groups in armored personnel carriers and reconnaissance and security elements of the division. For this reason, two of the howitzer battalions are self-propelled units.

Other differences between the New Division artillery and the ROCID division artillery follow. The battery detail has been eliminated from all howitzer batteries. All headquarters batteries have a target acquisition platoon. Survey capability is concentrated at battalion level. All forward observers are organic to the headquarters batteries. Each howtzer battery has three officers. These changes in artillery structure were dictated by the requirement to stay within personnel space limitations and at the same time provide an organization based on the principles governing the mission and employment of artillery.

The New Division artillery organization meets the requirements governing the missions and employment of the field artillery. The addition of direct support artillery for each battle group reestablishes the infantry-armor-artillery team and eliminates the disadvantages of the ROCID artillery structure.

Five howitzer battalions (direct support) assure the battle group commander a minimum of 1 battalion with 2 howitzer batteries. The division artillery commander controls a flexible organization which is immediately responsive to the needs of the force as a whole. The capability of the division artillery to mass fires is enhanced. Furthermore, the New Division artillery organization is based upon proven artillery principles. It provides the division with an increase in firepower and immediate responsiveness.

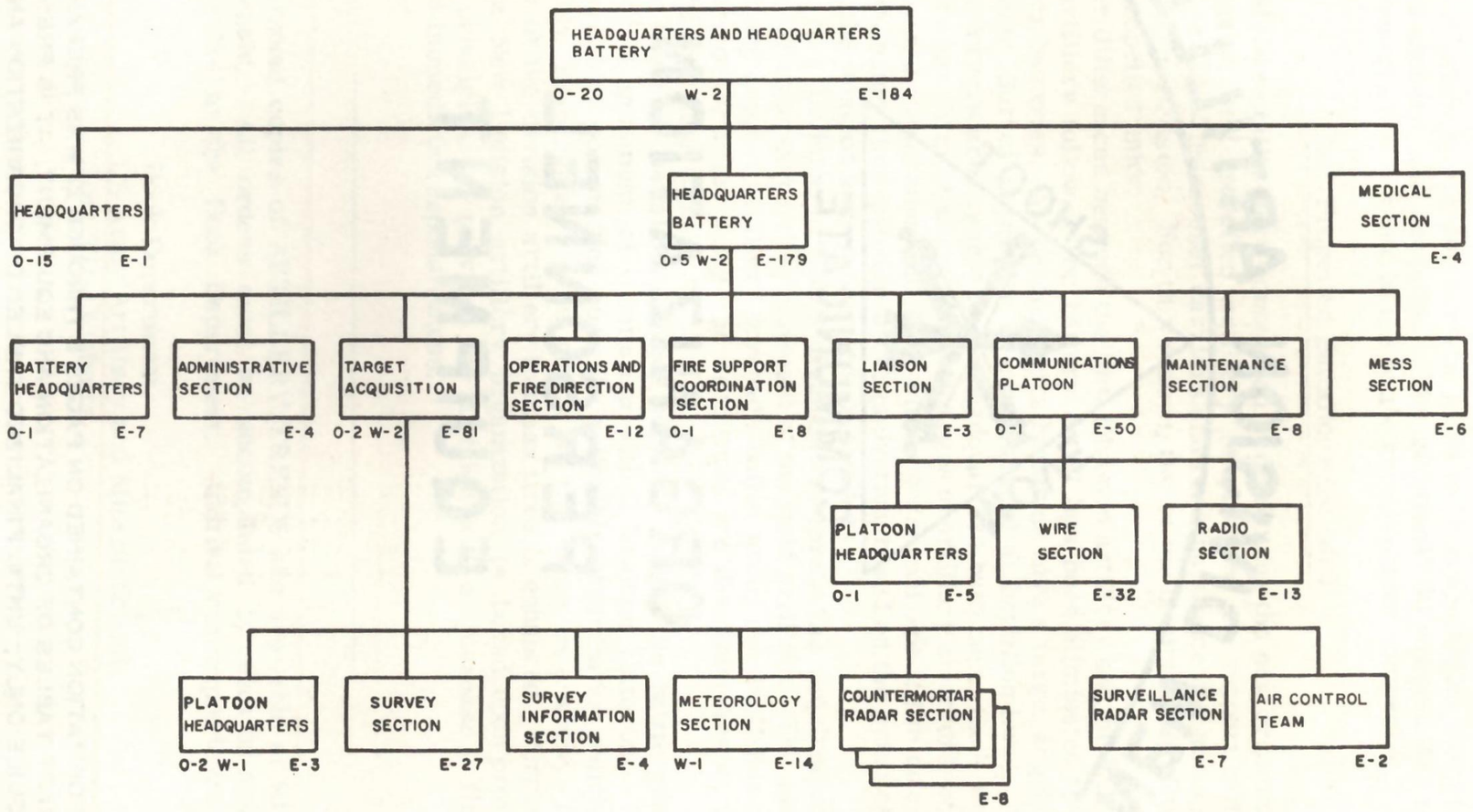
Additional copies of ARTILLERY TRENDS are available at $0.15 each postpaid. All orders must be accompanied by check or money order payable to the Book Department. Address correspondence to:

Book Department
US Army Artillery and Missile School
Fort Sill, Oklahoma

ORGANIZATION
PERSONNEL
EQUIPMENT

INFORMATION CONTAINED ON PAGES 8 THROUGH 22 WAS PREPARED FROM DRAFT TABLES OF ORGANIZATION AND EQUIPMENT. IT IS PRESENTED AS A GUIDE ONLY, UNTIL FINALIZED TABLES OF ORGANIZATION AND EQUIPMENT ARE PUBLISHED BY THE DEPARTMENT OF THE ARMY.

HEADQUARTERS AND HEADQUARTERS BATTERY, INFANTRY DIVISION ARTILLERY



Shoot

.45 cal pistols- 16
7.62-mm rifles-- 189
7.62-mm MG's---- 12
3.5" rkt lnchrs- 10

Move

Trucks:
- 1/4-ton-- 11
- 3/4-ton-- 24
- 2½-ton--- 14
- ambulance
  - 3/4-ton 1
- shop van- 5

Trailers:
- 1/4-ton-- 1
- 3/4-ton-- 13
- 1½-ton--- 3
- water---- 2

Communicate

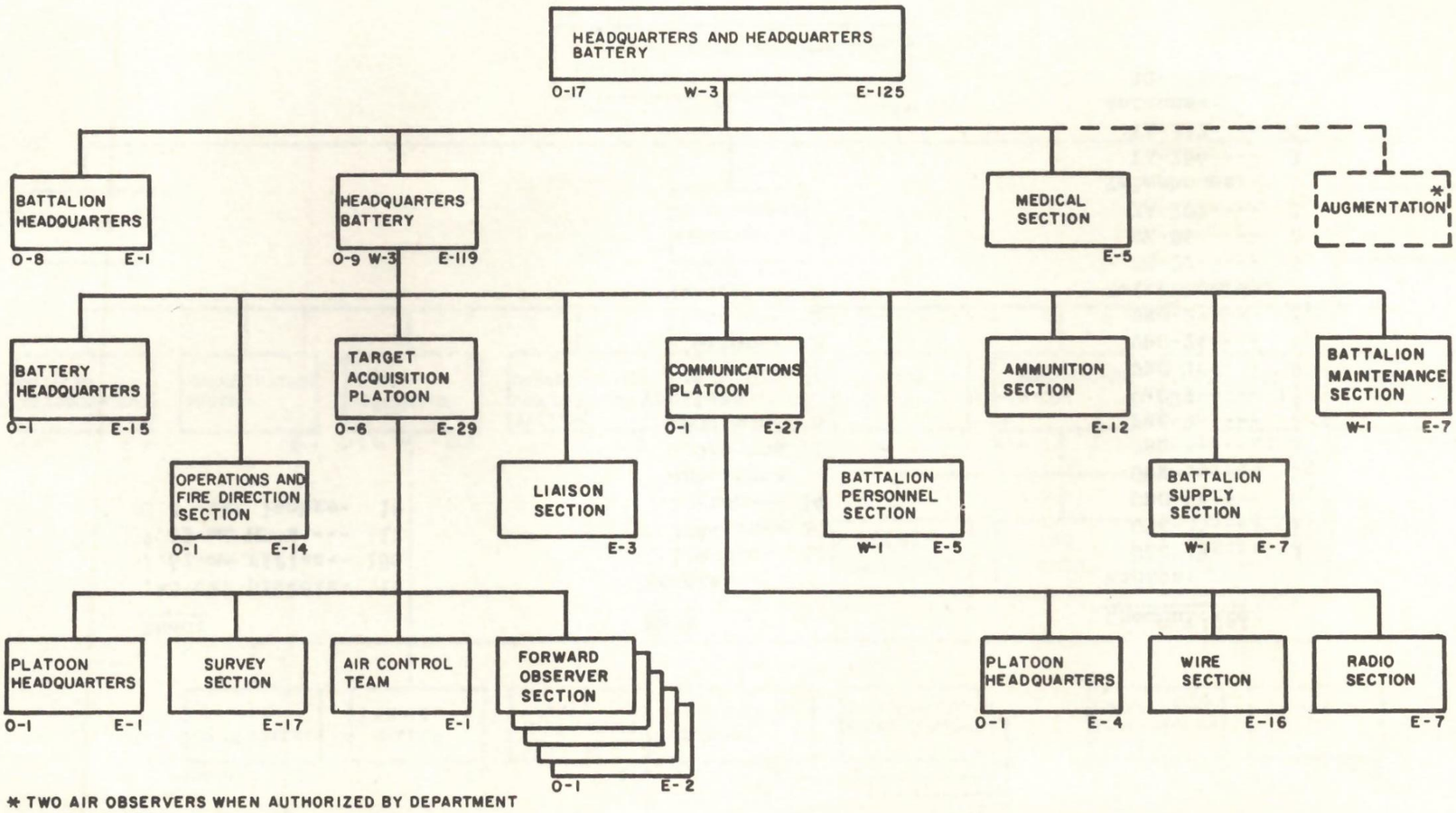
Radios:
- GRC-19---- 3
- GRC-35---- 1
- GRC-46---- 6
- GRR-5----- 3
- PRC-6----- 3
- PRC-9----- 7
- VRC-9----- 13
- VRC-10---- 4
- VRC-24---- 1
- VRQ-2----- 2

Switchboards:
- SB-22----- 5
- SB-86----- 2
- TA-207---- 2

Telephones:
- TA-264---- 3
- TA-312---- 56

Antennas:
- RC-292---- 5

HEADQUARTERS AND HEADQUARTERS BATTERY, FIELD ARTILLERY HOWITZER BATTALION, TOWED, INFANTRY DIVISION



* TWO AIR OBSERVERS WHEN AUTHORIZED BY DEPARTMENT OF THE ARMY.

Shoot

.45 cal pistols- 10
7.62-mm rifles-- 135
7.62-mm MG's---- 13
3.5" rkt lnchrs- 7

Move

Trucks:
- 1/4-ton-- 19
- 3/4-ton-- 13
- 2½-ton--- 8
- 5-ton---- 5
- ambulance
  - 1/4-ton 1
- wrecker-- 1

Trailers:
- 1/4-ton-- 8
- 3/4-ton-- 10
- 1½-ton--- 6
- ammo----- 5
- water---- 1

Communicate

Radios:
- GRC-46---- 2
- GRR-5----- 2
- PRC-6----- 4
- PRC-9----- 5
- PRC-10---- 5
- VRC-9----- 12
- VRC-10---- 1
- VRC-17---- 3
- VRC-35---- 1
- VRQ-2----- 3

Switchboards:
- SB-22----- 5

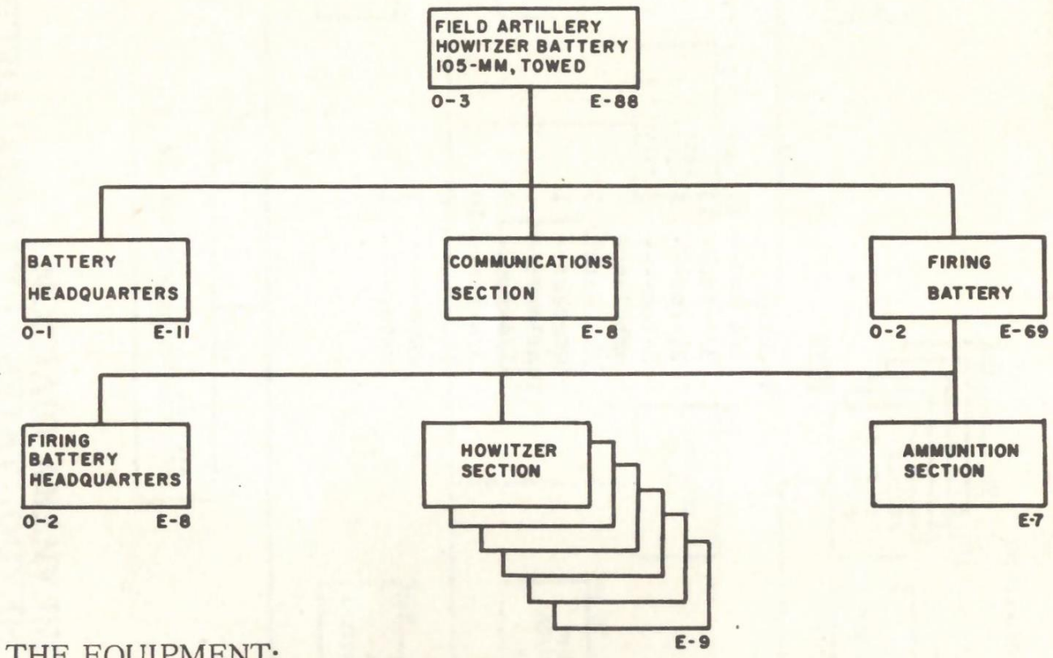
Telephones:
- TA-312---- 42
- TA-264---- 2

Antennas:
- RC-292---- 6

FIELD ARTILLERY
HOWITZER BATTERY,
105-MM, TOWED
INFANTRY DIVISION

THE WEAPON: Howitzer, 105-mm, M2A2.

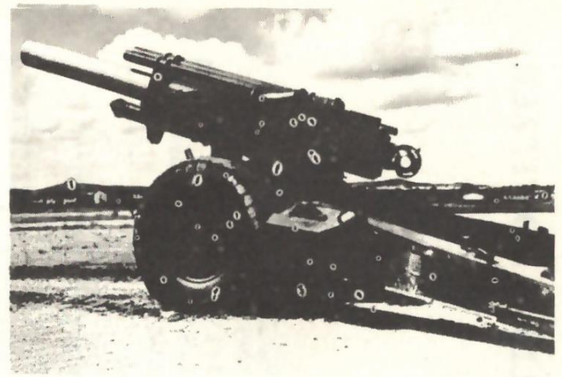
THE ORGANIZATION:



THE EQUIPMENT:

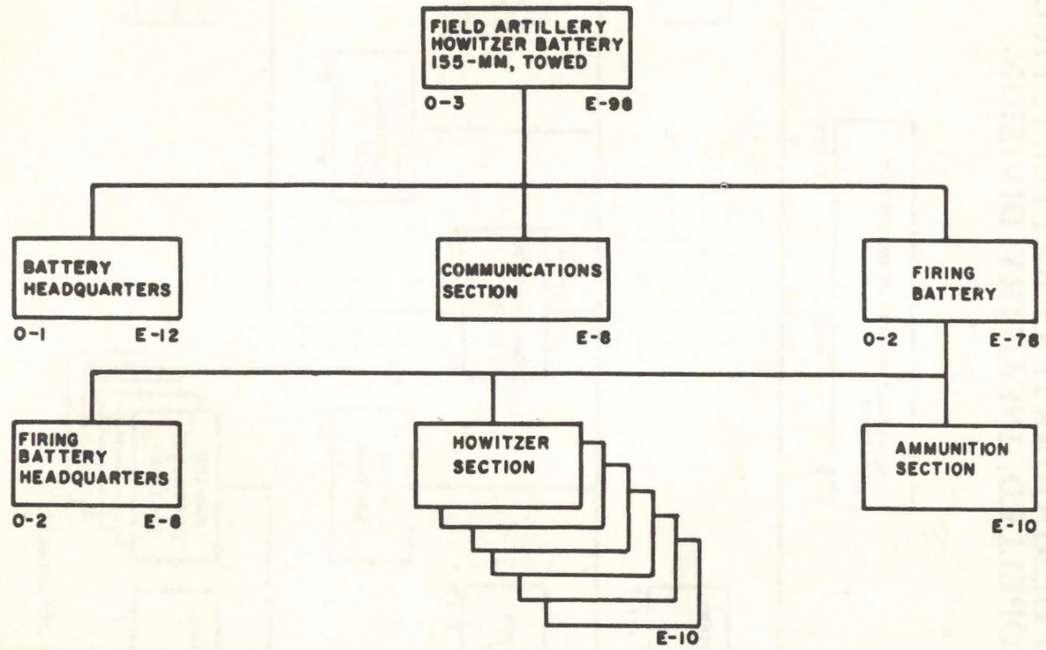
Shoot	Move	Communicate
105-mm howitzers-- 6	Trucks:	Radios:
.45 cal pistols-- 2	1/4-ton------ 3	VRC-9-- 3
7.62-mm rifles--- 89	3/4-ton------ 2	VRC-17- 1
7.62-mm MG's----- 11	2 1/2-ton---- 9	GRR-5-- 1
3.5" rkt lnchrs-- 5	5-ton-------- 2	Switchboards:
	Trailers:	SB-18-- 1
	1/4-ton------ 1	SB-22-- 2
	3/4-ton------ 2	Telephones:
	1 1/2-ton---- 1	TA-312-20
	ammo--------- 2	Antenna:
	water-------- 1	RC-292- 1

FIELD ARTILLERY
HOWITZER BATTERY,
155-MM, TOWED
INFANTRY DIVISION



THE WEAPON: Howitzer, 155-mm, M1A1.

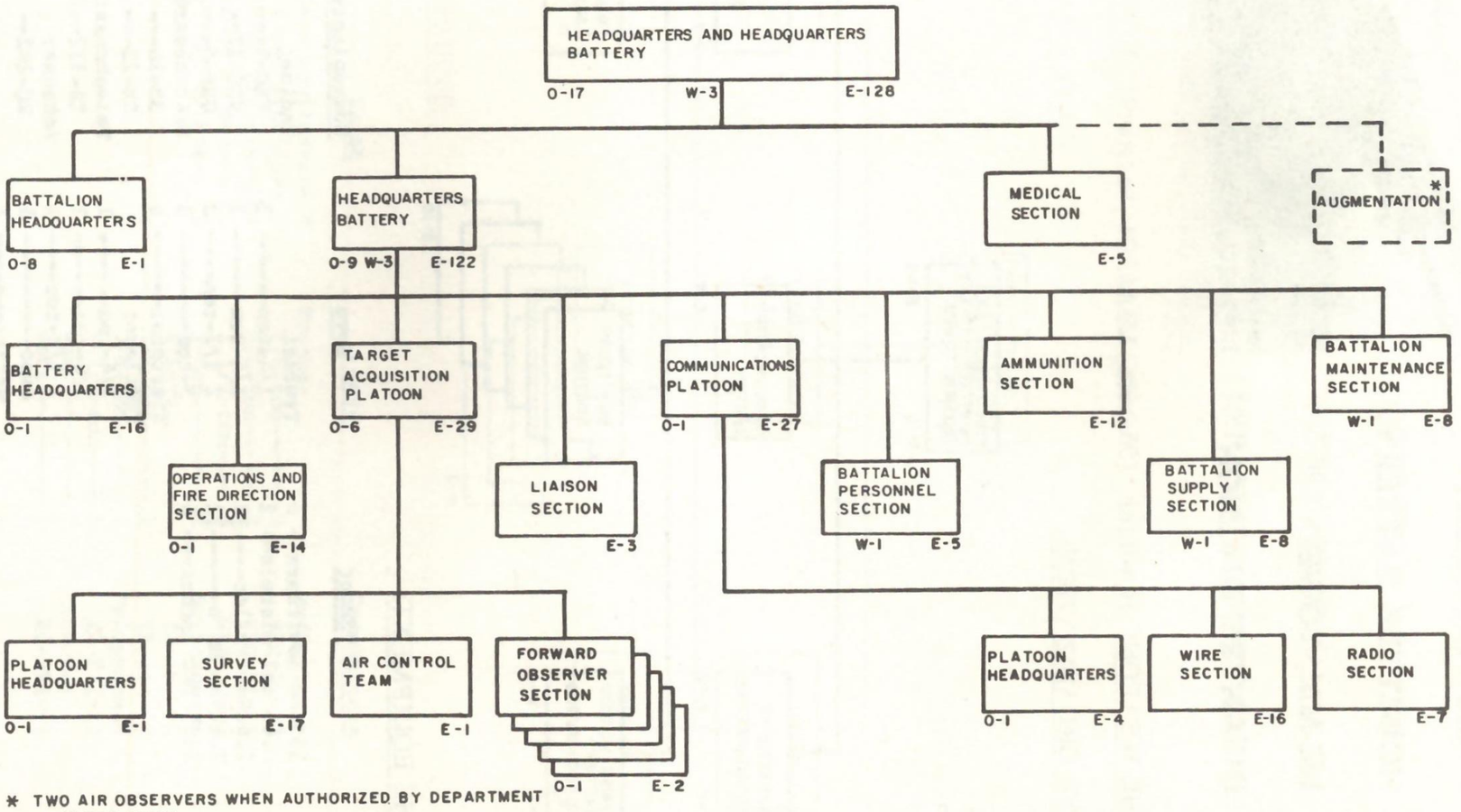
THE ORGANIZATION:



THE EQUIPMENT:

Shoot	Move	Communicate
155-mm howitzers-- 6	Trucks:	Radios:
.45 cal pistols-- 2	1/4-ton------ 3	VRC-9--- 3
7.62-mm rifles----99	3/4-ton------ 2	VRC-17-- 1
7.62-mm MG's------12	2 1/2-ton---- 3	GRR-5--- 1
3.5" rkt lnchrs--- 6	5-ton-------- 3	Switchboards:
	Tractors:------ 6	SB-18--- 1
	Trailers:	SB-22--- 2
	1/4-ton------ 1	Telephones:
	3/4-ton------ 2	TA-312--20
	1 1/2-ton---- 1	Antenna:
	ammo--------- 3	RC-292-- 1
	water-------- 1	

HEADQUARTERS AND HEADQUARTERS BATTERY, FIELD ARTILLERY HOWITZER BATTALION, SELF-PROPELLED, INFANTRY DIVISION



* TWO AIR OBSERVERS WHEN AUTHORIZED BY DEPARTMENT OF THE ARMY.

Shoot

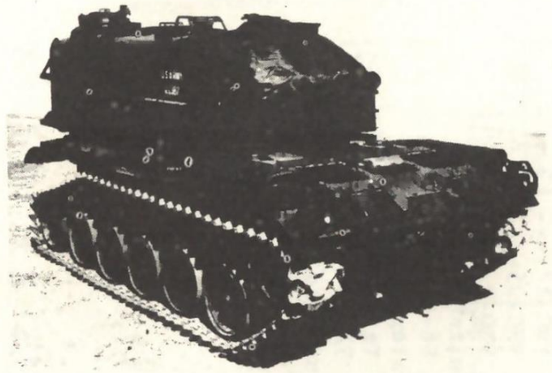
.45 cal pistols	10
7.62-mm rifles	138
7.62-mm MG's	13
3.5" rkt lnchrs	7

Move

Armored pers carrier	2
Trucks:	
1/4-ton	19
3/4-ton	11
2 1/2-ton	8
5-ton	5
ambulance 1/4-ton	1
gasoline tank	1
wrecker	1
Trailers:	
1/4-ton	8
3/4-ton	8
1 1/2-ton	6
ammo	5
water	1

Communicate

Radios:	
GRC-46	2
GRR-5	2
PRC-6	4
PRC-9	5
PRC-10	5
VRC-9	12
VRC-10	1
VRC-17	3
VRC-35	1
VRQ-2	3
Switchboard:	
SB-22	5
Telephones:	
TA-312	42
TA-264	2
Antennas:	
RC-292	6



FIELD ARTILLERY

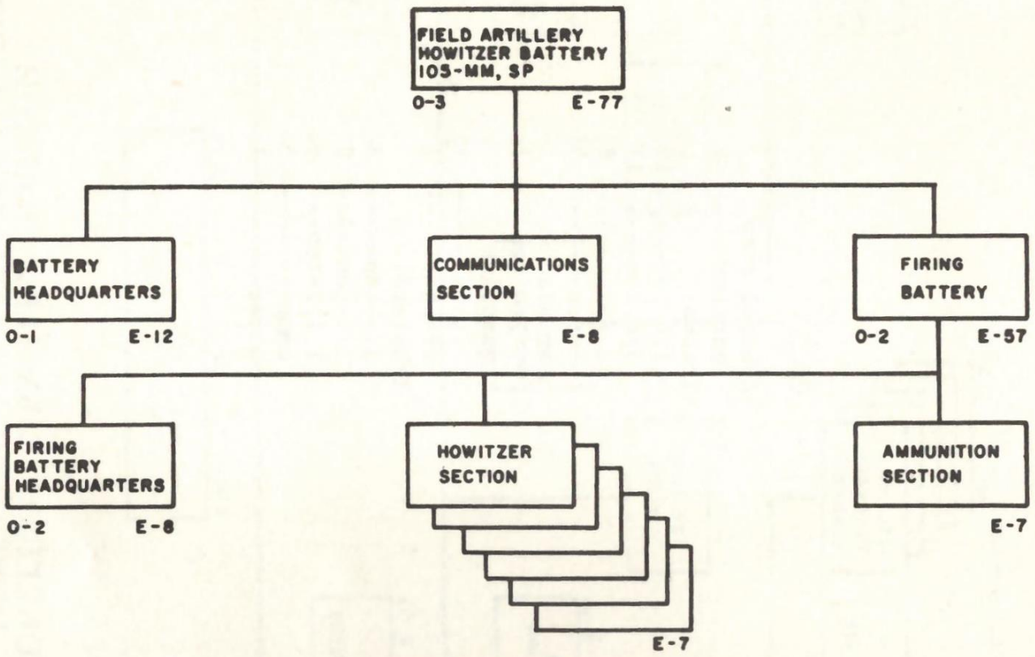
HOWITZER BATTERY,

105-MM, SELF PROPELLED

INFANTRY DIVISION

THE WEAPON: Howitzer, self-propelled, 105-mm, M52A1.

THE ORGANIZATION:



THE EQUIPMENT:

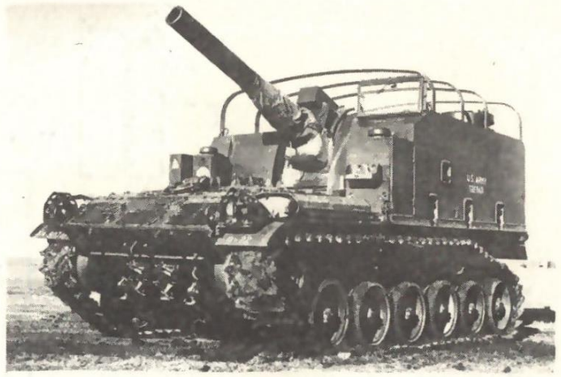
Shoot		Move		Communicate	
105-mm howitzers	6	Armored pers carrier	1	Radios:	
.45 cal pistols	2	Trucks:		VRC-9	3
7.62-mm rifles	78	1/4-ton	3	VRC-17	1
7.62-mm MG's	11	3/4-ton	1	GRR-5	1
3.5" rkt lnchrs	5	2 1/2-ton	3	Switchboards:	
		5-ton	2	SB-18	1
		Trailers:		SB-22	2
		1/4-ton	1	Telephones:	
		3/4-ton	1	TA-312	20
		1 1/2-ton	1	Antenna:	
		ammo	2	RC-292	1
		water	1		

FIELD ARTILLERY

HOWITZER BATTERY,

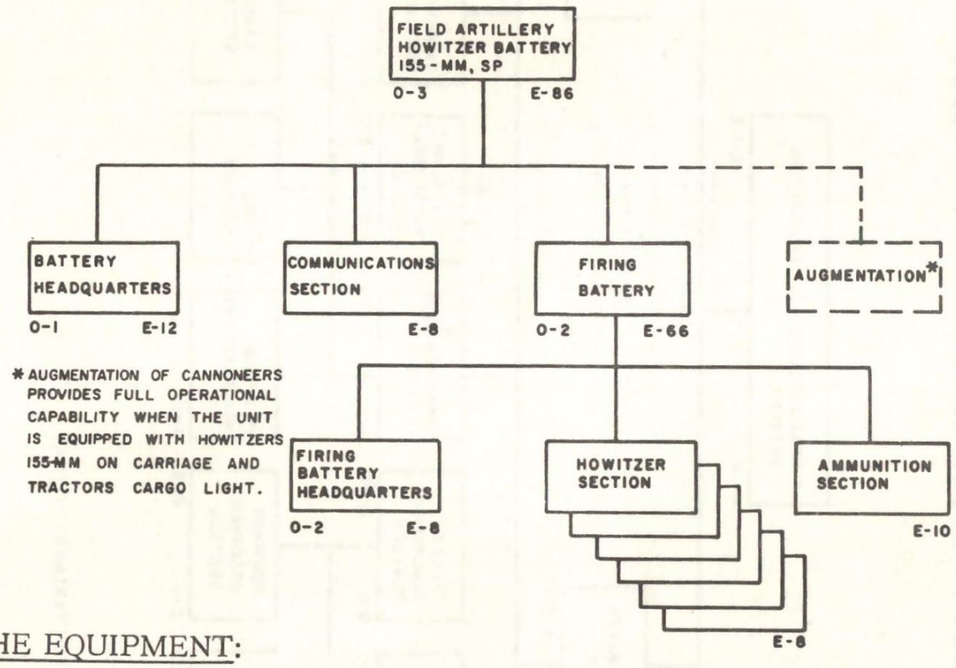
155-MM, SELF PROPELLED

INFANTRY DIVISION



THE WEAPON: Howitzer, self-propelled, 155-mm, M44A1.

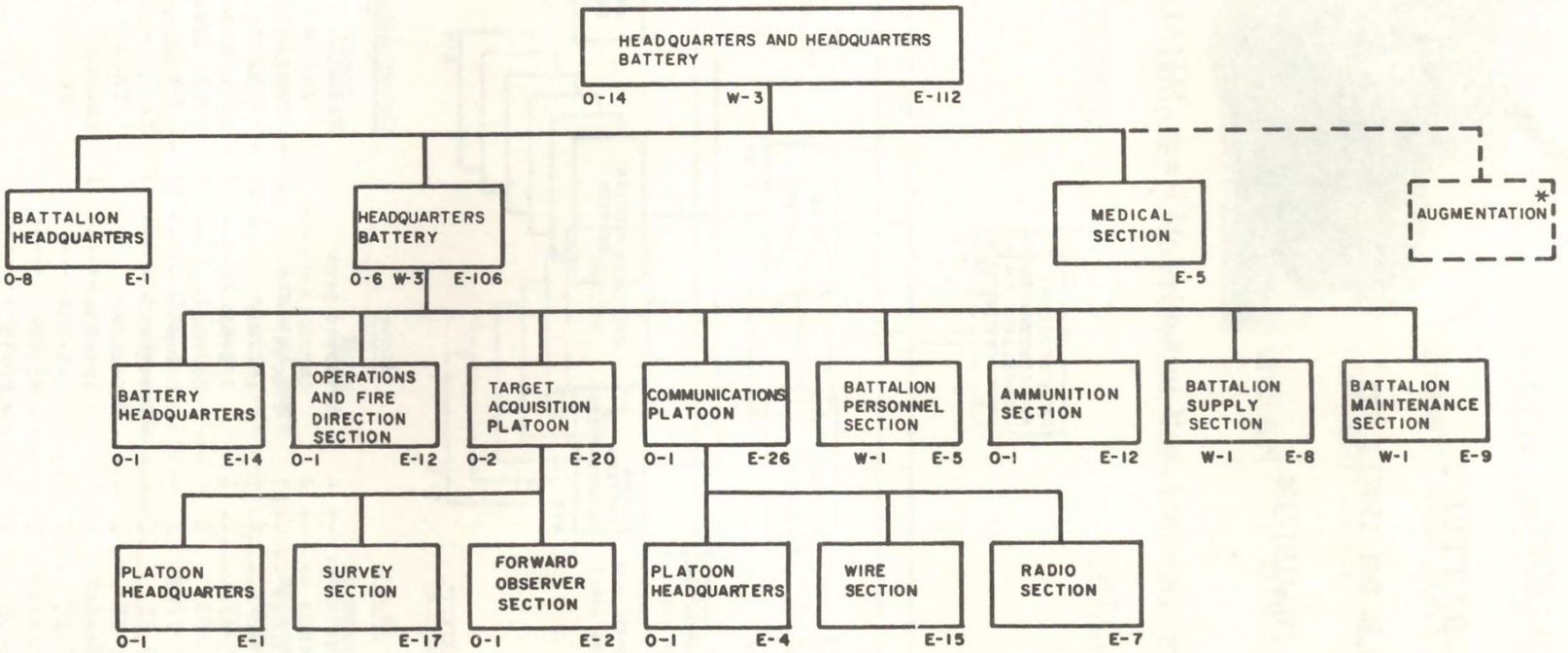
THE ORGANIZATION:



THE EQUIPMENT:

Shoot		Move		Communicate	
155-mm howitzers	6	Armored pers carrier	1	Radios:	
.45 cal pistols	2	Trucks:		VRC-9	3
7.62-mm rifles	87	1/4-ton	3	VRC-17	1
7.62-mm MG's	12	3/4-ton	1	GRR-5	1
3.5" rkt lnchrs	6	2½-ton	3	Switchboards:	
		5-ton	3	SB-18	1
		Tractors	6	SB-22	2
		Trailers:		Telephones:	
		1/4-ton	1	TA-312	20
		3/4-ton	1	Antenna:	
		1½-ton	1	RC-292	1
		ammo	3		
		water	1		

HEADQUARTERS AND HEADQUARTERS BATTERY, FIELD ARTILLERY ROCKET/HOWITZER BATTALION, INFANTRY DIVISION



* TWO AIR OBSERVERS WHEN AUTHORIZED BY DEPARTMENT OF ARMY.

Shoot

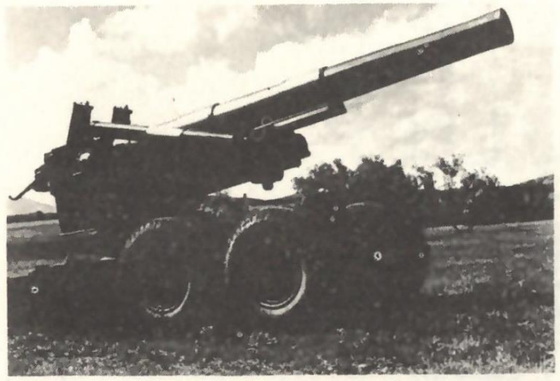
.45 cal pistols--- 12
7.62-mm rifles-----119
7.62-mm MG's------- 11
3.5" rkt lnchrs---- 7

Move

Trucks:
1/4-ton------14
3/4-ton------15
2 1/2-ton---- 9
10-ton------- 3
ambulance
3/4-ton---- 1
wrecker------ 1
tk rec veh--- 1
Trailers:
1/4-ton------ 1
3/4-ton------12
1 1/2-ton---- 7
ammo--------- 3
water-------- 1

Communicate

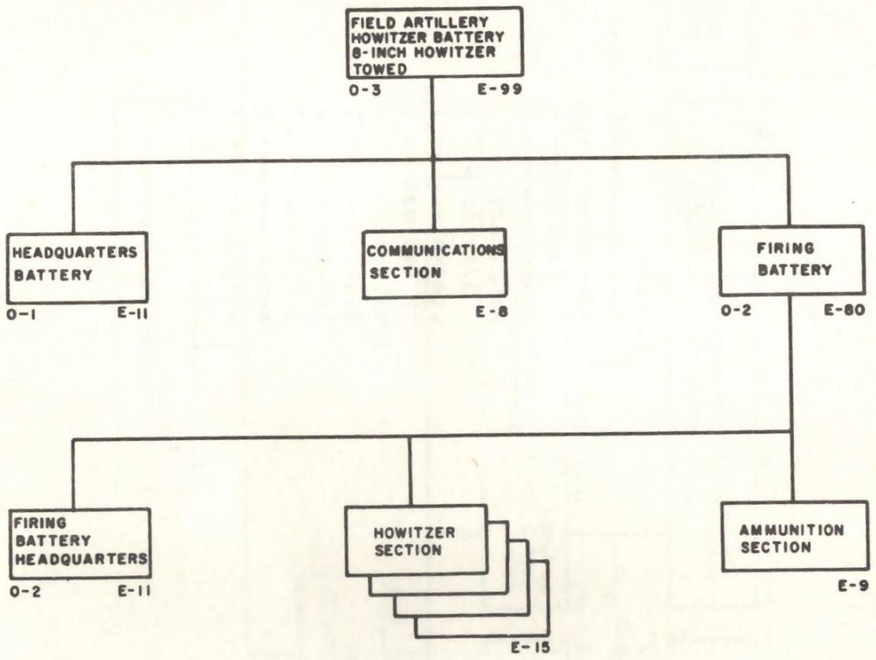
Radios:
GRC-46-- 2
GRR-5--- 2
PRC-6--- 4
PRC-9--- 4
VRC-9---12
VRC-17-- 3
VRQ-2--- 2
Switchboards:
SB-22--- 4
Telephones:
TA-264-- 2
TA-312--33
Antennas:
RC-292-- 5



FIELD ARTILLERY
HOWITZER BATTERY,
8-INCH, TOWED
INFANTRY DIVISION

THE WEAPON: Howitzer, 8-inch, M2.

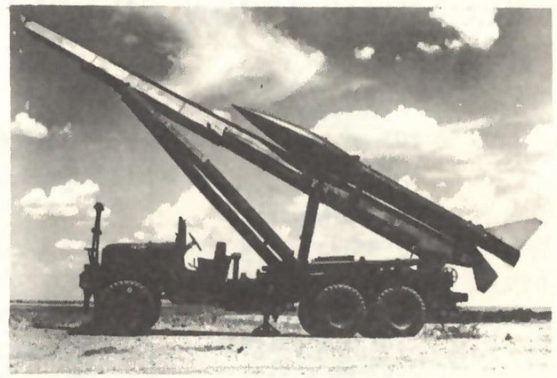
THE ORGANIZATION:



THE EQUIPMENT:

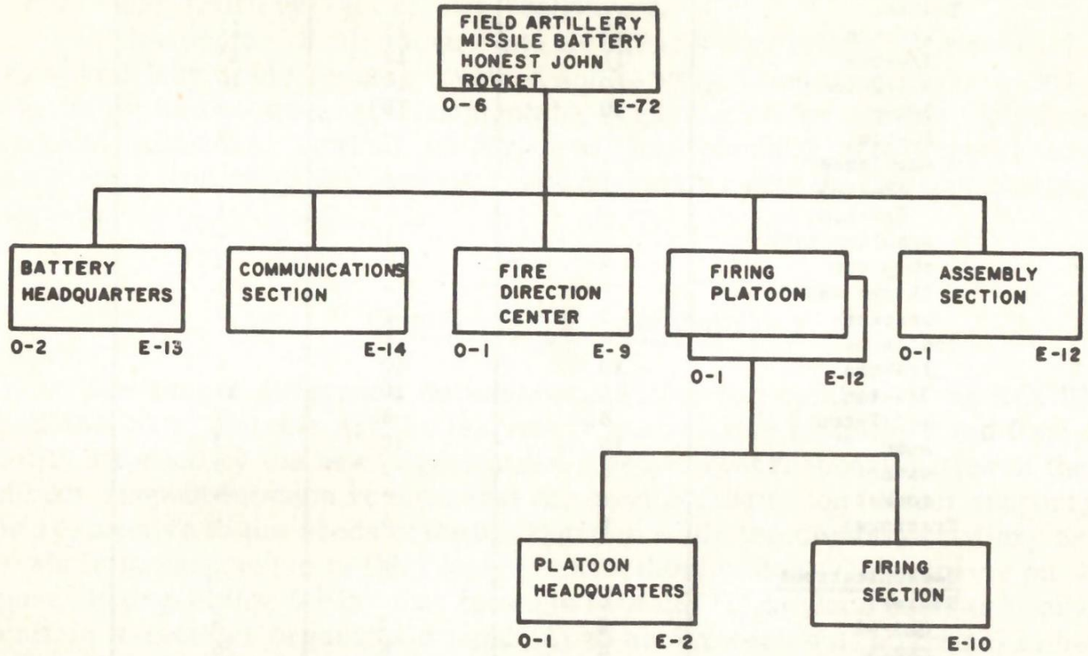
Shoot	Move	Communicate
8-inch howitzers-- 4	Trucks:	Radios:
.45 cal pistols-- 2	1/4-ton------ 3	GRC-46-- 1
7.62-mm rifles---100	3/4-ton------ 2	VRC-9--- 2
7.62-mm MG's------ 9	2 1/2-ton---- 3	VRC-17-- 1
3.5" rkt lnchrs--- 5	10-ton ------ 6	GRR-5--- 2
	shop van----- 1	Switchboards:
	Trailers:	SB-18--- 1
	1/4-ton------ 1	SB-22--- 3
	3/4-ton------ 2	Telephones:
	1 1/2-ton---- 1	TA-312--18
	water-------- 1	Antenna:
		RC-292-- 1

FIELD ARTILLERY
MISSILE BATTERY,
HONEST JOHN ROCKET
INFANTRY DIVISION



THE WEAPON: Honest John Rocket, 762-mm.

THE ORGANIZATION:



THE EQUIPMENT:

Shoot		Move		Communicate	
762-mm launchers-	2	Trucks:		Radios:	
.45 cal pistols-	2	1/4-ton	4	GRC-46--	2
7.62-mm rifles---	76	3/4-ton	8	VRC-9---	5
7.62-mm MG's-----	9	2 1/2-ton	6	VRC-17--	1
3.5" rkt lnchrs--	6	5-ton	4	GRR-5---	2
		shop van	1	Switchboards:	
		wrecker	2	SB-18---	1
		Trailers:		SB-22---	3
		1/4-ton	2	Telephones:	
		3/4-ton	5	TA-312--28	
		1 1/2-ton	1	Antenna:	
		rocket	4	RC-292--	3
		water	1		

RECAPITULATION OF EQUIPMENT BY BATTALION

Weapons	Total How Bn (towed)	Total How Bn (SP)	Total Rkt/How Bn
105-mm howitzers towed	6	-	-
self-propelled	-	6	-
155-mm howitzers towed	6	-	-
Self-propelled	-	6	-
8-inch howitzer	-	-	4
762-mm launchers	-	-	2
.45 cal pistols	14	14	16
7.62-mm rifles	323	303	295
7.62-mm MG's	36	36	29
3.5" rkt lnchrs	18	18	22
Transport			
Armd pers carr	-	4	-
Trucks:			
1/4-ton	25	25	21
3/4-ton	17	13	25
2 1/2-ton	20	14	18
5-ton	10	10	4
10-ton	-	-	9
ambulance			
1/4-ton	1	1	-
3/4-ton	-	-	1
gasoline tank	-	1	-
shop van	-	-	2
tk rec veh	-	-	1
wrecker	1	1	3
Trailers:			
1/4-ton	10	10	4
3/4-ton	14	10	19
1 1/2-ton	8	8	9
ammo	10	10	3
water	3	3	3
rocket	-	-	4
Tractors:	6	6	-
Communications			
Radios:			
GRC-46	2	2	5
GRR-5	4	4	6
PRC-6	4	4	4
PRC-9	5	5	4
PRC-10	5	5	-
VRC-9	18	18	19
VRC-10	1	1	-
VRC-17	5	5	5
VRC-35	1	1	-
VRQ-2	3	3	2
Switchboards:			
SB-18	2	2	2
SB-22	9	9	10
Telephones:			
TA-264	2	2	2
TA-312	82	82	80
Antennas:			
RC-292	8	8	9

TACTICAL EMPLOYMENT OF THE NEW DIVISION ARTILLERY

Lieutenant Colonel William J. Wood
Department of Tactics and Combined Arms

The requirements of the battlefield of the future were the paramount considerations on which the US Army Artillery and Missile School based its recommendations for the New Division artillery. This does not mean that the tactical fundamentals developed in World War II and the Korean conflict were ignored. On the contrary, it was evident that past lessons would add the required balance to the forecast of the future. Hence, the general fundamentals which govern the employment of field artillery continue to apply. These fundamentals are explained in FM 6-20, December 1958, Field Artillery Tactics and Techniques.

A discussion of all tactics and techniques concerning the New Division artillery would become involved and lengthy. Consequently, this article is limited to general fundamentals, organization for combat including tactical missions, tactical employment, fire planning, fire support coordination, liaison, and coordination of operations with the infantry mortar platoon.

Organization for Combat

The major difference between organizing for combat in the ROCID and the New Division artilleries lies in the relative simplicity and flexibility afforded by the new organization. The inherent responsibilities of the direct support mission require that the howitzer battalion (direct support) is responsive to the needs of the battle group while the division artillery as a whole is responsive to the requirement of the division. The primary purpose of organizing for combat remains twofold: (1) to place each artillery unit in a tactical organization and (2) to assign each unit a tactical mission. The provisions, objectives, and considerations outlined in FM 6-20 also are unchanged since generally they will apply to any organization. Another consideration was the table of tactical missions in FM 6-20. Continuous review by the School and contact with artillerymen in the field has shown a definite requirement for restoring general support, reinforcing as a separate tactical mission. Therefore, forthcoming doctrinal publications will amend the paragraph and chart on tactical missions to reflect this change. Consequently, the table in FM 6-20, December 1958, has been amended to add the information in table 3.

Prior to the latest reorganization, two additional missions were envisioned for the artillery with the division. These two missions were "support" and "general support of the battle group by organic artillery." The support mission will be retained for future study concerning its use with the pentomic infantry division on the nuclear battlefield when the

An Arty Unit with a mission of	Answers calls for fire from	Establishes liaison with	Has the following zone of fire	Must furnish forward observers	Displaces on order of
General support, reinforcing	Next higher hq Reinforced unit. Own observers.	Reinforced unit	Zone of action of supported unit	As requested by reinforced unit subject to approval of higher hq	Next higher Artillery hq or as requested by reinforced unit subject to approval of next higher hq.

Table 3. Responsibilities inherent to the mission of general support, reinforcing.

infantry brigade or a task force composed of two or more battle groups is employed under a single commander. The mission of general support of the battle group will be applicable only when artillery is attached to the battle group. Two statements now can provide general guidance for the employment of the New Division artillery. First, one howitzer battalion normally will be in support of each committed battle group. Second, the rocket/howitzer battalion (general support) normally will be given a mission of general support.

Tactical Employment

Naturally there are differences in the employment and organization for combat between the New Division and ROCID artilleries. Situations have been developed to graphically show these differences. In the first situation (fig 3) the ROCID artillery supports the attack of the 1st Infantry Division.

The main attack will be made by the 1/2 Inf (1st Battle Group, 2d Infantry) in the form of a penetration to seize objective 2. Secondary attacks will be made by the 1/1 Inf; 1/3 Inf; and the 1/4 Inf. Initially, the division reserve consists of the 1/5 Inf and the 1/37 Armor (1st Medium Tank Battalion, 37th Armor) (minus). Both reserve units under the control of the 1st Infantry Division Brigade. The positions of the ROCID artillery units are shown as follows: (1) Batteries A, B, C, D, and E are 105-mm howitzer units organic to the 1/1 Arty (1st Howitzer Battalion, 1st Artillery), and their positions are indicated by unshaded symbols. (2) The battalion position area of the 1/1 Arty, is indicated by a solid line "goose-egg." (3) Batteries A, B, C, and D, whose positions are shown as shaded symbols, are organic to the 1/2 Arty. The battalion position area of the 1/2 Arty, is shown by a broken line "goose-egg." (4) Those

Organization for Combat
ROCID Artillery
In the Attack

a. 1st How Bn, 1st Arty:
Btry C
Btry D
Btry B, 1st FA Bn, 2d Arty;
Support 1st BG, 3rd Inf, and 1st BG, 4th Inf; prepare to support div res, on order.
BG plan fires of one 105-mm btry each.

b. Btry A, 1st How Bn, 1st Arty:
Reinforce fires of mortar btry, 1st BG, 1st Inf.

c. 1st FA Bn, 2d Arty:
Btry A
Btry B, 1st How Bn, 1st Arty
Btry E, 1st How Bn, 1st Arty;
Support 1st BG, 2d Inf; prepare to reinforce mortar btry, 1st BG, 5th Inf, with one 105-mm btry on order.

d. Btry C, 1st FA Bn, 2d Arty: GS.

e. Btry D, 1st FA Bn, 2d Arty: GS.

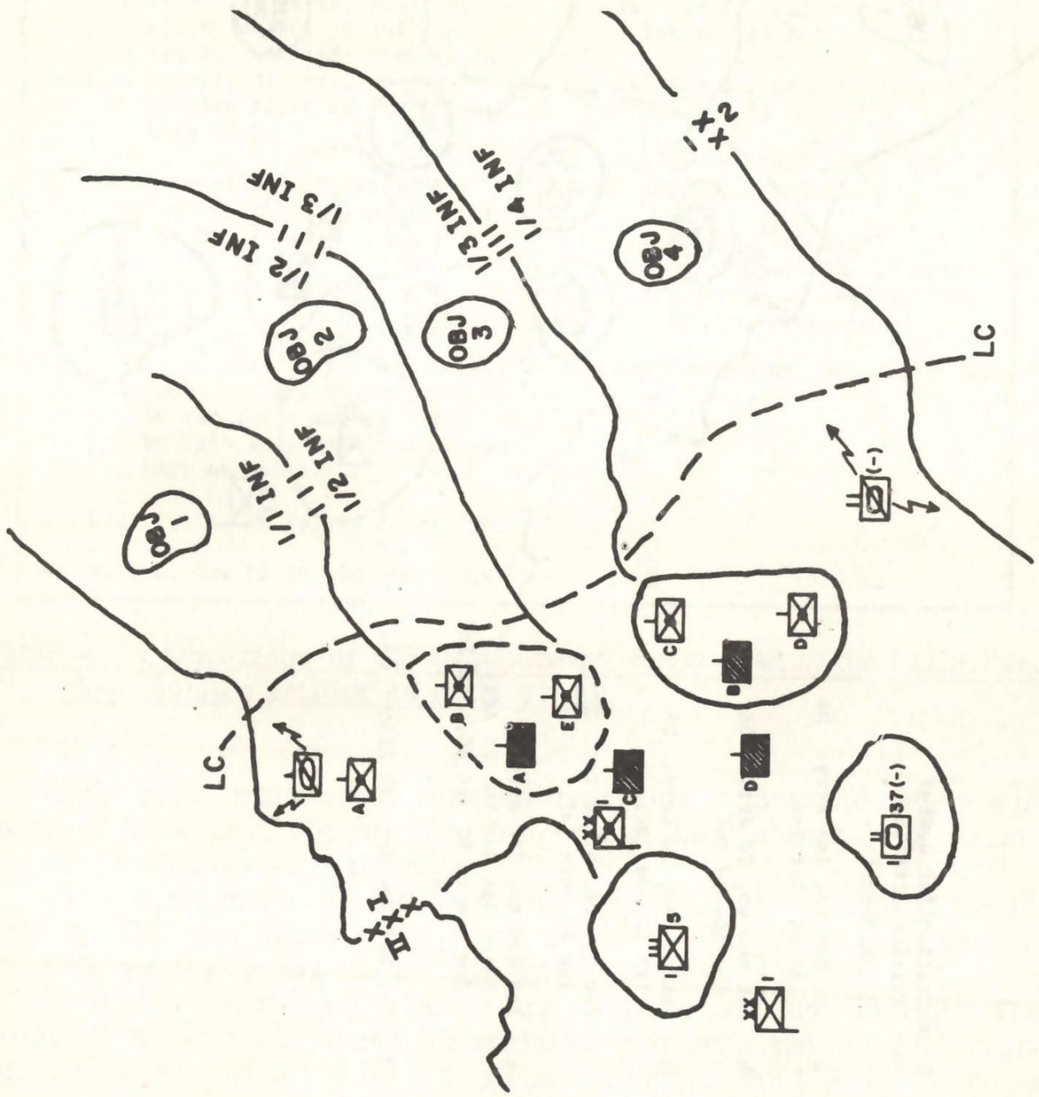
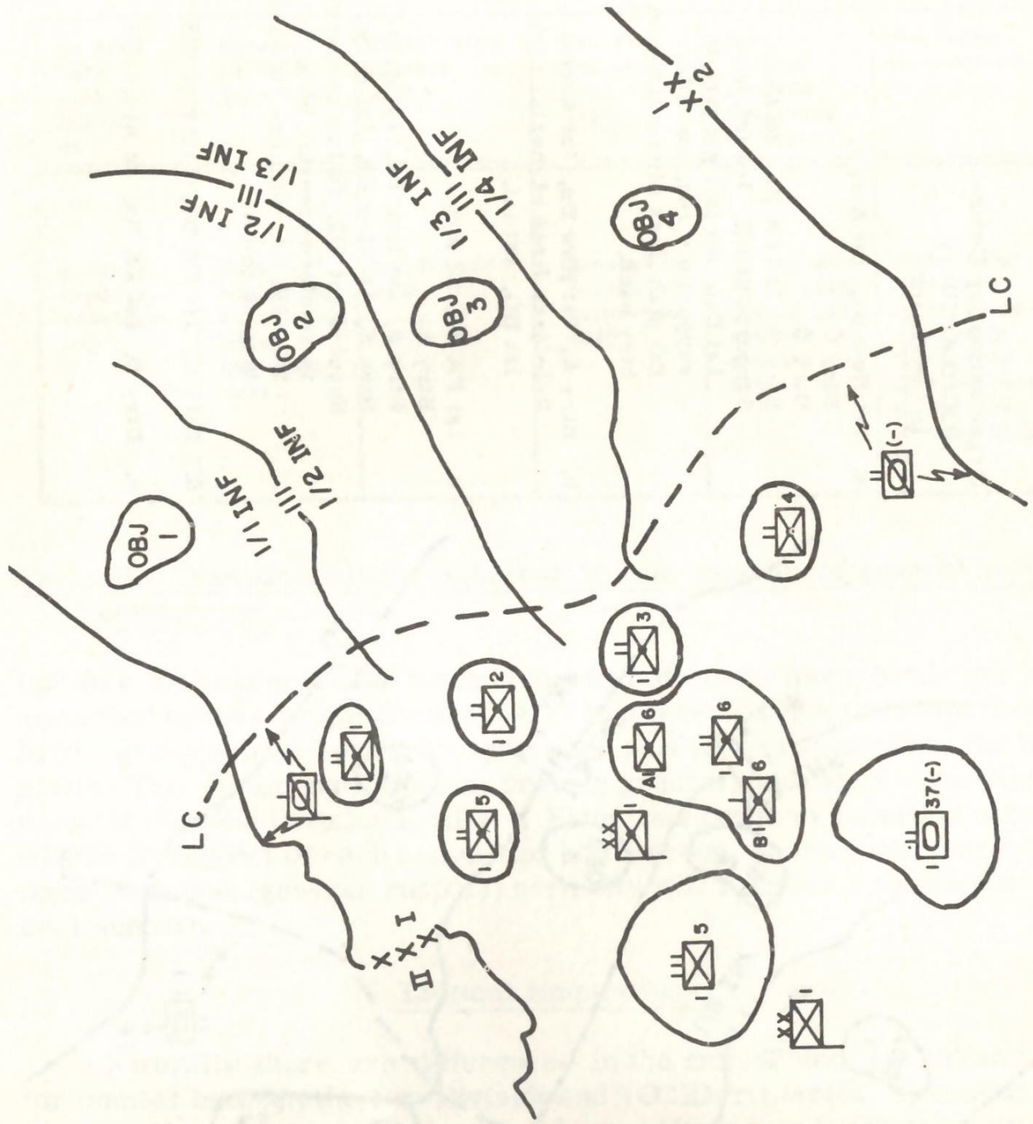


Figure 3. ROCID artillery in support of the attack.



Organization for Combat
New Division Artillery
In the Attack

a. 1st How Bn, 1st Arty: DS
   1st BG, 1st Inf.

b. 1st How Bn, 2d Arty: DS
   1st BG, 2d Inf.

c. 1st How Bn, 3d Arty: DS
   1st BG, 3d Inf.

d. 1st How Bn, 4th Arty: DS
   1st BG, 4th Inf.

e. 1st How Bn, 5th Arty:
   Reinf 1st How Bn, 2d Arty;
   Prepare to DS 1st BG, 5th Inf
   on order.

f. 1st Rkt/How Bn, 6th Arty: GS.

Figure 4. New Division artillery in support of the attack.

batteries shown outside of the battalion areas have been assigned a tactical mission different than the one assigned their parent battalion. In this typical method of employment and the resultant organization for combat, direct support will be provided by the mortar batteries of the battle groups. The division artillery must provide reinforcing fires for the mortar batteries as well as other fire support for the division. The required fire support must be accomplished using only two battalion headquarters. These requirements and limitations result in a normal employment of both battalions as composite units. Therefore batteries are

Organization for Combat ROCID Artillery In the Attack	Organization for Combat New Division Artillery In the Attack
a. 1st How Bn, 1st Arty: Btry C Btry D Btry B, 1st FA Bn, 2d Arty; Support 1st BG, 3d Inf, and 1st BG, 4th Inf; prepare to support div res, on order. BG plan fires of one 105-mm btry each.	a. 1st How Bn, 1st Arty: DS 1st BG, 1st Inf.
	b. 1st How Bn, 2d Arty: DS 1st BG, 2d Inf.
	c. 1st How Bn, 3d Arty: DS 1st BG, 3d Inf.
	d. 1st How Bn, 4th Arty: DS 1st BG, 4th Inf.
b. Btry A, 1st How Bn, 1st Arty: Reinforce fires of mortar btry, 1st BG, 1st Inf.	e. 1st How Bn, 5th Arty: Reinf 1st How Bn, 2d Arty; Prepare to DS 1st BG, 5th Inf on order.
c. 1st FA Bn, 2d Arty: Btry A Btry B, 1st How Bn, 1st Arty Btry E, 1st How Bn, 1st Arty; Support 1st BG, 2d Inf; prepare to reinforce mortar btry, 1st BG, 5th Inf, with one 105-mm btry on order.	f. 1st Rkt/How Bn, 6th Arty: GS.
d. Btry C, 1st FA Bn, 2d Arty: GS.	
e. Btry D, 1st FA Bn, 2d Arty: GS.	

Table 4. Comparison of the organization for combat of the ROCID and New Division artilleries in the attack.

constantly being transferred between battalions to meet the demands of different situations. The result is reflected in the complicated organization for combat shown in figure 3.

The deployment of the New Division artillery to support the 1st Infantry Division attack described above is illustrated in figure 4.

The position areas of the howitzer battalions (1/1 Arty, 1/2 Arty, 1/3 Arty, 1/4 Arty and 1/5 Arty) are shown by unshaded symbols. The batteries of the rocket/howitzer battalion are indicated within the battalion area. Since the 1/5 Inf is in division reserve, the 1/5 Arty is being

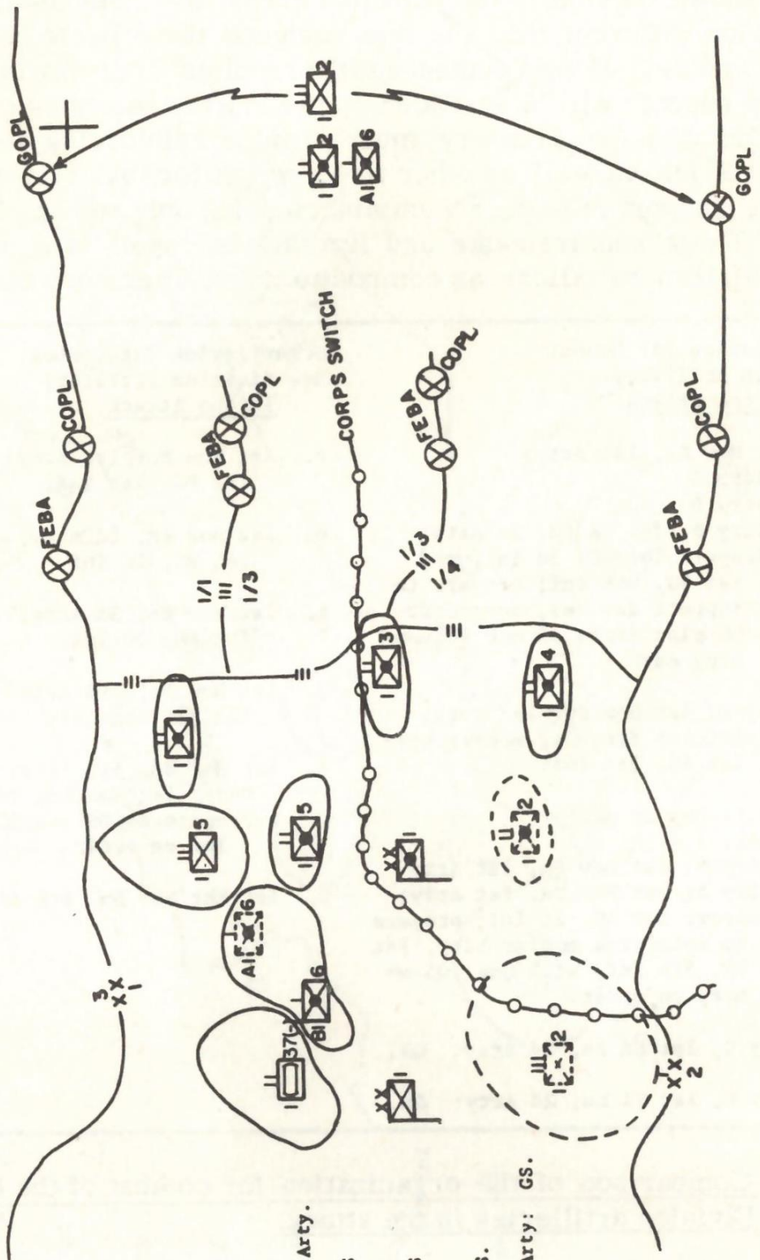


Figure 5. New Division artillery in the defense.

used to give weight to the main effort by the assignment of the mission of reinforcing the 1/2 Arty. This example illustrates that normally, howitzer battalions will not be held in reserve even though their "team mate" battle groups are in reserve. However, in such cases the howitzer battalion should be ready to renew the direct support mission when the battle group which it normally supports is committed.

For comparison, the organization for combat of the ROCID and New Division artilleries is shown in table 4. The advantages of the additional control headquarters in the New Division artillery also are illustrated.

Employment in Defense

The employment of the New Division artillery in defense is shown in figure 5. In this situation the 1st Infantry division has established an extended position defense on a 21-kilometer frontage. The position is a part of a corps mobile defense. Switch positions have been designated by corps within the division sector. The 1/2 Inf (reinforced) occupies the general outpost line (GOPL). Attached to it are the 1/2 Arty and Battery A, 1/6 Arty (8-inch howitzer). Thus, all types of division cannon artillery are represented on the GOPL. The 1st Infantry Division defends with three battle groups forward (1/1 Inf, 1/3 Inf, and 1/4 Inf). In direct support of them are the 1/1 Arty, the 1/3 Arty, and the 1/4 Arty, respectively. The division reserve, initially, is composed of the 1/5 Inf and the 1/37 Armor (1st Medium Tank Battalion, 37th Armor) (minus). Upon withdrawal of the GOPL and subsequent passage through the forward edge of the battle area (FEBA), the GOPL force will occupy the positions shown by broken symbols. At that time Battery A, 1/6 Arty will revert to control by its parent battalion and the 1/2 Arty will be assigned the mission of general support, reinforcing the 1/4 Arty.

The above discussion and figures 3 through 5 bring out the basic considerations in the employment of the New Division artillery. Another consideration is the employment of batteries when detached from their parent battalions. It should no longer be necessary to transfer batteries between battalions to meet changes in the tactical situation. However, there will be cases when the temporary attachment of a battery may be required. Such cases could include support of task forces in exploitation or pursuit, support of security forces such as those which occupy a GOPL, and the temporary replacement of noneffective units. When a firing battery of a howitzer battalion is attached to another headquarters, it will be necessary to augment the battery with survey equipment and personnel, long-range radio equipment, forward observers, and ammunition resupply means.

The employment of the two firing batteries of the rocket/howitzer battalion must be considered. It is best to retain the two batteries under the control of the parent battalion. However, the mission, the situation, or the terrain, particularly on the nuclear battlefield, may require that a battery be attached to another artillery headquarters. The battery may be

attached to the nearest howitzer battalion or placed directly under division artillery control.

When it is desirable to detach one or two 8-inch howitzer sections to execute a mission, the augmentation required must be furnished by the battalion except for fire direction personnel and equipment. The battery cannot provide the required survey and communications means. In regard to the method of employment, detached howitzer sections may execute missions assigned to the battalion or the battery. Eight-inch howitzers and Honest John platoons, may be attached to another artillery headquarters. The organization and equipment of the Honest John battery make the battery capable of operating by platoon for limited periods. The battery can provide each platoon with the necessary personnel and equipment for fire direction, communication, and assembly functions. However, survey support must be furnished by the battalion. The platoon, when operating separately may execute a mission under the one assigned to the battalion or battery. When circumstances dictate, the platoon may be attached to another artillery headquarters.

Fire Planning

The following discussion is devoted to fire planning procedures and channels in the New Division artillery. To make a comparison in this field between the ROCID and New Division artilleries would serve no purpose and would confuse and obscure the essentials.

In effect, fire planning in the New Division artillery follows the well established procedures used in the Triangular Division artillery. There are three outstanding exceptions: (1) The howitzer battalion is in direct support of a group of 5 rifle companies instead of a regiment of 3 battalions. (2) The artillery battalion now requires only one liaison officer whose station is at the battle group command post. (3) The terminology used in fire planning in FM 6-101, January 1952, is no longer appropriate. Specifically, terms now obsolete are "general plan of support," "close support plan," and "direct support plan." These terms have been superseded by the "fire support plan" and the "artillery fire plan." The fire support plan is the announcement of the commander's decisions regarding the employment of fire support. It is the coordinated plan for employment of all fire support available to the commander. The plan is published as an annex to the operation order. The artillery fire plan is designated for each level (battle group, division, corps, and army) and is published as an appendix to the fire support plan.

The basic principles of fire planning have not changed nor have the techniques involved in constructing the artillery fire plan. The changes are the channels through which fire planning is accomplished. Fire planning channels within the infantry division are traced in figure 6.

The lowest echelon concerned with artillery fire planning is the forward observer with the rifle company. In conference with the company commander, the forward observer prepares a basic fire plan. Often, this

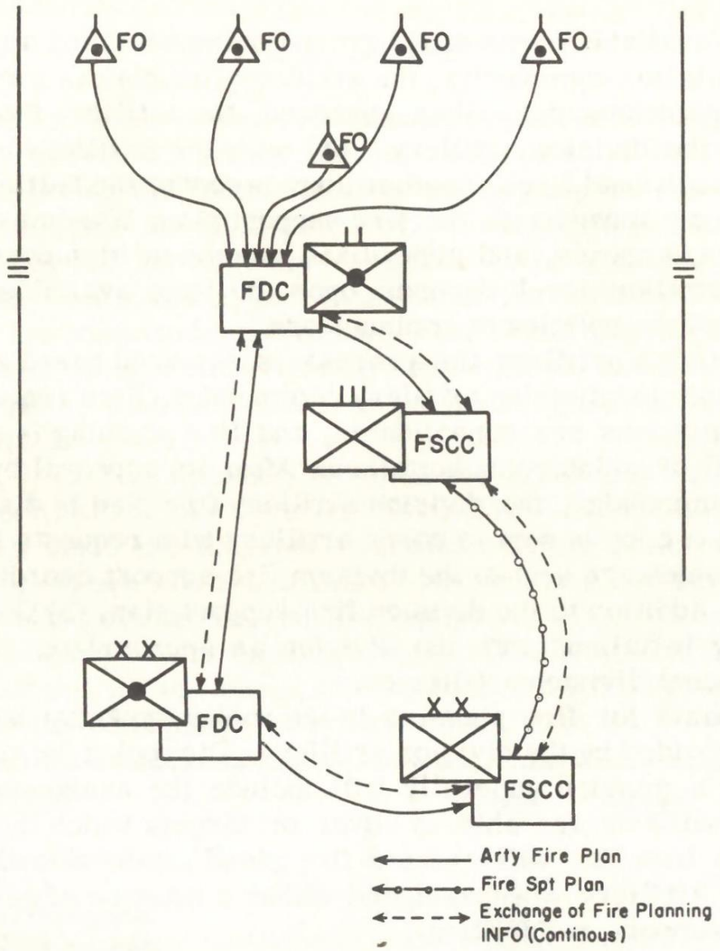


Figure 6. New Division artillery fire planning channels.

may be nothing more than a target list (ARTILLERY TRENDS, October 1958, p. 46). The plan is forwarded to the fire direction center (FDC) of the howitzer battalion. This procedure is followed for several reasons. First, the FDC is the focal point for target intelligence at this level. Secong, forward observers are continually in communication with the FDC, sending fire missions, reporting combat intelligence, and supplying post attack information. Third, the direct channel from the forward observer to the FDC provides the simplest and most effective channel available.

S3 Supervises Preparation of Fire Plan

The artillery battalion S3 is the staff officer charged with supervising the preparation of the artillery fire plan. He insures that all fire requests are coordinated and that additional fires are planned as necessary. In so doing he implements the guidance received from his battalion commander who, in turn, has based his guidance upon that provided in the fire support portion of the battle group commander's concept of operation. When finalized (it must include complete integration with other fire sup-

port means available to the battle group commander) and approved by the artillery battalion commander, the artillery fire plan is forwarded to the battle group commander. When approved, the artillery fire plan is forwarded to the division artillery FDC with the artillery battalion's requests for additional fires. Another copy is sent to the battle group where it becomes an appendix to the fire support plan. Whether or not operations orders, annexes, and appendixes become written documents at the howitzer battalion level depends upon the time available, the tactical situation, and the policies of commanders.

At division artillery the process is repeated based upon guidance received from the division artillery commander. Fire requests from the howitzer battalions are consolidated, and fire planning is accomplished for attached or reinforcing battalions. After its approval by the division artillery commander, the division artillery fire plan is disseminated as follows: (1) A copy is sent to corps artillery with requests for additional fires. (2) Copies are sent to the division fire support coordination center (FSCC) for addition to the division fire support plan. (3) Copies are sent to artillery battalions with the division as appropriate. (4) Copies are sent to adjacent division artilleries.

The basis for fire planning in the rocket/howitzer battalion is the guidance provided by the division artillery. The rocket/howitzer battalion commander's mission generally will include the assignment of an area which his weapons are able to cover or targets which they are able to reach. This battalion will execute fire plans as developed and directed by division artillery when assigned either a mission of general support or general support, reinforcing.

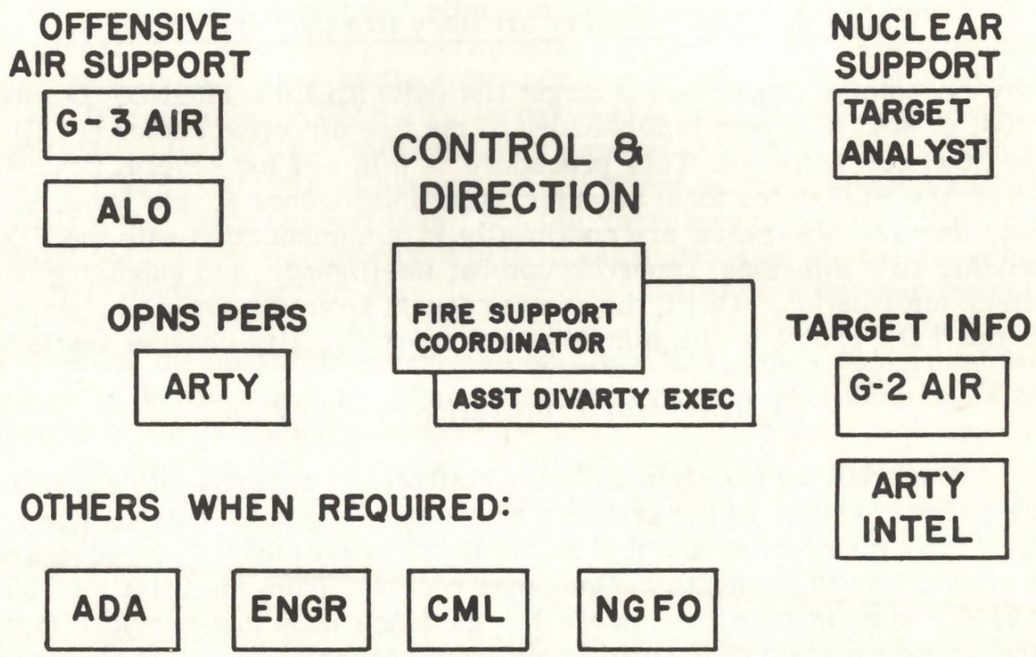


Figure 7. Typical division FSCC.

Fire Support Coordination

The principles and procedures which govern the coordination of fire support are covered in current doctrine and forthcoming publications. Hence, the following discussion is directed only toward points which are peculiar to the New Division artillery. The essential features at both division artillery and battle group levels will be considered.

The size, composition, and location of the division FSCC are determined by the commander. The size of the FSCC may vary during different phases of an operation. Usually, more people are required during the planning phase than the execution phase. A typical division FSCC is shown in figure 7.

Figure 7 is not intended to show an actual physical layout, but rather, the composition of a typical division FSCC. All artillery personnel are not shown since the diagram indicates only the basic requirements for functioning at any one time. Table 5 shows the FSCC personnel provided by the table of organization and equipment (TOE) of the New Division artillery headquarters and headquarters battery. With the exception of the two officers, all personnel are listed in the fire support coordination section of the headquarters battery TOE.

Duty Position	MOS	Grade	Number
assistant executive officer	51193	Lt Col	1
assistant S3	52162	Major	1
operations sergeant	15270	E7	1
intelligence sergeant	15270	E7	1
chief fire direction computer	15260	E6	2
clerk typist	71110	E4	1
radio telephone operator	14000	E3	1
radio-teletype operator	05310	E4	2

Table 5. Personnel provided by TOE for continuous duty at division FSCC.

The division FSCC normally will be located close to the G2-G3 section within the division command post. In selecting the command post, consideration is given to the requirement of continuous communication between the FSCC and fire support agencies, in particular, the division artillery FDC. In addition, operational procedures must plan for continuous operation of the FSCC during displacements.

Commander--the Coordinator

The division artillery commander is the division fire support coordinator. His principle assistant, and representative in the FSCC, is the division artillery assistant executive officer. This lieutenant colonel operates in the FSCC on a full time basis. He represents the fire support coordinator in his absence and supervises the implementation of the

commander's concept of fire support. The commander's guidance and general plan for the employment of fire support, including that for nuclear weapons, is included in his concept of operation. This may be announced orally or, if written, shown in paragraph 3a of the division operation order. The fire support portion of this concept forms the foundation for the fire support plan. The latter, when written, becomes an annex to the operation order. The fire plans of the various fire support agencies are appended to the fire support plan. The appendixes which may be required include: (1) the artillery fire plan; (2) naval gunfire plan; (3) air fire plan; (4) nuclear fire plan; (5) chemical, biological and radiological (CBR) fire plan. The fire support coordinator is responsible for the preparation of the fire support plan and for insuring that the various fire plans are coordinated during their planning and execution.

No Formal FSCC at Battle Group

Neither doctrine nor practice prescribe a formal FSCC at battle group level. However, the basic functions are performed by the battle group commander, the fire support coordinator, key personnel of the battle group staff, and certain other personnel. As at division, the size, composition, and location of the FSCC are determined by the guidance and policies of the commander. In accordance with the established principle, the commander of the howitzer battalion is the fire support coordinator since he is the senior artillery officer at the battle group echelon. Because the artillery commander cannot physically be present in the FSCC at all times, he is represented by the artillery liaison officer. The liaison officer is assisted by his own section and other personnel designated by his battalion commander. The artillery representation at battle group may vary with the operational workload.

The fire support coordinator works with the following personnel who are organic to, or may be with, the battle group staff: S3, S2, S3 Air, forward air controller (an Air Force officer), naval gunfire liaison officer (a Naval officer), and other operations and intelligence personnel as required. The battle group S3 is the infantry staff officer primarily concerned with the coordination of fire support and maneuver. In the absence of the battle group commander, he may be responsible for informing FSCC personnel of the tactical situation, the battle group plan of action, and any contemplated changes in operations.

The fire support coordinator bases the fire support plan on the fire support portion of the battle group commander's concept of operation and requests for fires from the companies. In so doing, he resolves conflicting requests from the companies. He uses all fire support means organic to, or directly available to, the battle group before he requests additional fire support. Requests for air strikes and for naval gunfire are coordinated with the forward air controller or naval gunfire liaison officer, and then integrated into the fire support plan as required. When the approved artillery fire plan is received from the howitzer battalion, it is appended to the fire support plan.

Liaison

Most of the changes characteristic of the New Division artillery have been mutually advantageous to the infantry and artillery. One of the most important changes is the reestablishment of effective command liaison at battle group level. The new organization authorizes a lieutenant colonel to command the howitzer battalion. Because of the direct support relationship, he also is the fire support coordinator for the battle group. Thus, an experienced artillery officer with an appropriate staff exercises the command contact which has proved so essential to an efficient infantry-artillery team.

Since the artillery battalion commander cannot remain indefinitely with the battle group commander, the howitzer battalion has a liaison officer (captain) and section (liaison sergeant, liaison specialist, and driver-radio operator). They are stationed at the battle group command post. As previously stated, the liaison officer acts as the battle group fire support coordinator in the absence of his battalion commander.

A liaison officer has been provided in the headquarters of the rocket/howitzer battalion. When this battalion is assigned a mission of general support, liaison will be established as directed by division artillery. The liaison officer may be stationed at the division artillery command post. If not, he will act as directed by his battalion commander. Since liaison may be a function of the tactical mission, the rocket/howitzer battalion liaison officer's station will be established accordingly. For example, if the battalion has been assigned the mission of general support, reinforcing a certain battalion, the liaison officer will be sent to the command post of the reinforced battalion.

Liaison Officer in Division Artillery Headquarters

The TOE of the division artillery headquarters and headquarters battery contains a provision for one liaison officer and section. This officer's station will be as directed by the division artillery commander. It may vary from operation to operation. However, it is anticipated that normally he will be sent to the command post of an adjacent division artillery in accordance with corps directives or standing operating procedure (SOP). For example, a corps SOP may prescribe that division artilleries maintain liaison from left to right. Hence, the division artilleries of committed divisions send a liaison officer to the command post of the division artillery on its right flank.

Liaison between division artillery and corps artillery is established by corps artillery. This is in keeping with established artillery liaison principles since corps artillery does not command the artillery of the divisions with the corps. TOE 6-501D, Headquarters and Headquarters Battery, Corps Artillery, contains provisions for five liaison officers and sections. The majority of these are used for liaison with division artilleries.

Employment of the Infantry Mortar Platoon

Informal coordination with the US Army Infantry School has provided the following general guidance for coordination of artillery support with that of the infantry mortar platoon.

Since the mortar platoon is now an infantry element organic to the battle group, its employment is based on the orders and policies of the battle group commander. However, in order to realize the full effectiveness of the mortars in the overall support of the battle group, the following principles for coordination of mortar fires with those of the howitzer battalion should be considered:

(1) The mortar platoon normally will be employed in general support (mission assigned by the battle group commander) of the battle group with its fires and fire direction operations closely tied to those of the artillery battalion in direct support of the battle group.

(2) The artillery battalion commander, as fire support coordinator, will plan the fires of the mortar platoon and integrate them into the fire support plan.

(3) Both artillery and mortar forward observers will send fire requests directly to the howitzer battalion FDC.

(4) The officer in charge of the artillery howitzer battalion FDC will determine which unit(s) will fire the mission. If the mission is more appropriate to the mortars, the artillery FDC will direct the mortar platoon FDC to fire it.

The above guidance is not intended to interfere with the employment of the mortar platoon by the battle group commander. The battle group commander may attach the mortar platoon to a task force or utilize it or its elements separately if the situation warrants.

Items Currently Under Study

As this issue of ARTILLERY TRENDS goes to press there are several items still undergoing study at the School. If these studies result in changes within the New Division artillery, they will be covered in later issues.

The areas under consideration are concerned with the coordination of fire support at division, brigade, and battle group levels.

First, it has been suggested that the title of division artillery assistant executive officer be changed to assistant division fire support coordinator. The purpose of this change is to delineate more clearly the primary function of this officer because of the importance of this job to the division as a whole.

Second, a proposal is under study which adds an artillery officer and small section to the staff of the brigade headquarters. This officer and section could be provided by the TOE of the division artillery headquarters battery. This officer assisted by his section would function as fire support coordinator when the brigade operates in command of task

forces or engages in similar operations when it is impracticable for the division to coordinate fire support for the brigade. His title would be brigade fire support coordinator.

Third, it has been proposed that in the howitzer battalion, the title of liaison officer be changed to assistant fire support coordinator. This change is similar to that proposed at division level since in actuality, fire support coordination is the primary function of the liaison officer. His duties require his constant presence at battle group. Therefore, the suggested title becomes more appropriate.

The basic and proven principles pertaining to the employment of artillery have not been changed. However, the application of these principles were adjusted to make them compatible with the new organization and the battlefield of the future. The resourcefulness, initiative, and leadership of the commander will continue to decisively influence the outcome of the battle.

A GEM FOR THE BATTERY EXECUTIVE

Artillery weapon laying time can be reduced if the reconnaissance party places a gun stake at each weapon position and reads a deflection to each stake. The recorded deflection on the stake may be used by the gunner as his first deflection reading. The weapons should be brought into position as close to the stake as possible to reduce the offset angle between the sight and gun stake. With practice, the gun crew will be able to lay their weapons much faster. Many times the weapon will be unlimbered within 20 mils of the direction of fire.

--Submitted by 1st Lt Robert A. Ray
2d Howitzer Battalion, 36th Artillery
Fort Sill, Oklahoma

Do You Have A Better Solution?

Do you know a better way or have a new method of accomplishing an artillery task than the device or technique now being used? Share your knowledge with other artillerymen. Send that idea to:

ARTILLERY TRENDS
Department of TL & NRI, USAAMS
Fort Sill, Oklahoma

BATTALION FIVE VOLLEYS—
FIRE DIRECTION IN THE NEW DIVISION ARTILLERY

To support the rapid moving maneuver elements on a fluid battlefield, the fire direction procedures for the New Division artillery must be simple, fast, and flexible.

Although the howitzer battalion (direct support) is a relatively small unit (pages 10-13), it packs a big wallop. It can shoot rapidly and accurately in response to fire requests.

The batteries contain the minimum fire direction personnel needed to conduct a fire mission (table 6). Battalion fire direction personnel are located in the operations and fire direction section of the headquarters and headquarters battery.

The operations sergeant and operations clerk who are found on the battalion level are not included in table 6. Their main duties are in operations rather than fire direction, but they are available for relief and displacement duty in the fire direction center (FDC). The operations sergeant is the senior noncommissioned officer in the operations and fire direction section. Normally he will supervise the posting of situation maps and the conduct of activities other than technical fire direction. The operations clerk assists the sergeant. Also included in the section is an adequate number of radiotelephone operators.

The following personnel normally will be in the howitzer battalion FDC: the assistant S3, the senior fire direction computer (enlisted supervisor), chart operator number 1 (HCO), chart operator number 2 (VCO), fire direction computer number 1 (computes for A battery, 105-mm howitzer), fire direction computer number 2 (computes for B battery, 155-mm howitzer), a switchboard operator (operates FDC switchboard), a radiotelephone operator number 1 (operates radio in FDC net), and a radiotelephone operator number 2 (operates radio in command net).

There are two officers in the battalion FDC. One of them, the S3, has the ultimate staff responsibility for operations and fire direction. He is responsible to the commander for the functioning of the FDC but normally will not be tied down to its continuous technical functioning. He probably will delegate supervision of the FDC to the assistant S3. There is no TOE position of fire direction officer (FDO).

Battery (105-mm and 155-mm)		Battalion	
fire direction computer	1	senior fire direction computer	1
chart operator	1	fire direction computer	3
recorder	1	chart operator	2
	3		6

Table 6. The enlisted personnel (excluding radiotelephone operators) normally assigned to the battery and battalion fire direction centers.

Fire Direction System Restudied

The limited number of fire direction personnel was a principle factor necessitating a restudy of the fire direction system. Also there are operational reasons for reconsidering the decentralized fire direction system used in the ROCID artillery.

In the New Division artillery, a battalion, not a battery, supports the battle group. Also, there is more emphasis on massing battalion fire. Massed fire can be accomplished more readily by centralized fire direction. Another item considered was the human element. The check chart system was a result of the recognition that human beings operating the FDC can make errors. Neither the battery nor the battalion in the New Division artillery has sufficient personnel to man, on a 24-hour basis, the "check chart" FDC used in the ROCID artillery. However, if fire direction for the battalion is concentrated in one place, the problem of checking is simplified. The S3, assistant S3, and supervisory enlisted personnel can look over the shoulders of operators and hear the commands that are transmitted to the batteries, thereby providing adequate checks.

Considering the above discussion, the emphasis, in the howitzer battalions, will be on battalion fire direction. The battalion will control, direct, and mass fires using a simplified, two-chart system.

Two-Chart System

Current US Army Artillery and Missile School thinking (although not final) forms a battalion FDC which operates with two basic charts--the grid sheet firing chart (for horizontal control), and the battlemap (for vertical control). The two chart operators at the battalion FDC will be called the HCO (horizontal control operator) and the VCO (vertical control operator).

The indication is that the battalion FDC will use the range deflection fan (fig 8) and the graphical firing table (GFT) (fig 9). For single battery fires, which may be required for emergency situations, the battery FDC may use the graphical firing table fan (fig 10). Because of the different calibers, charges, and corrections which exist between the 105-mm and 155-mm howitzer batteries, the different ballistic scales required for use with the GFT fan at the battalion FDC would be cumbersome and might result in errors.

A battalion with different caliber batteries will have a different referred deflection for each battery if the aiming posts are placed as prescribed in paragraph 75b of Field Manual 6-40 Field Artillery Gunnery. The different referred deflections will result in a clutter of figures on the arc of the range deflection fan. This problem can be solved with a common referred deflection for all batteries. For weapons with slipping azimuth scales on their sights, aiming posts should be placed as prescribed in Field Manual 6-40. Then the slipping scale should be turned to indicate the common referred deflection setting.

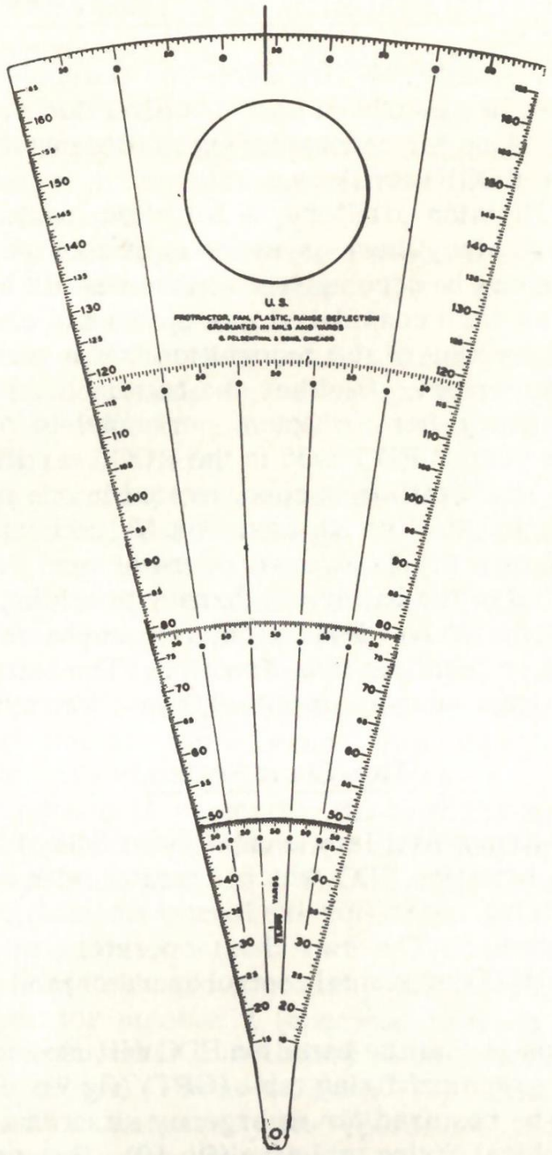


Figure 8. The range deflection fan probably will be used in the battalion FDC.

The School presently is conducting a study to determine what common referred deflection setting should be used by all batteries, regardless of caliber and type (towed or self-propelled). Since the counter on the sight of the 105-mm howitzer, self-propelled, M52, automatically sets the referred deflection setting at 3200 after the aiming posts are placed, it appears that all other weapons should use a common referred deflection setting of 3200 until the School's study is completed.

Communication between the FDC and the batteries usually will be by wire with the battery computers in the battalion FDC operating the telephones.

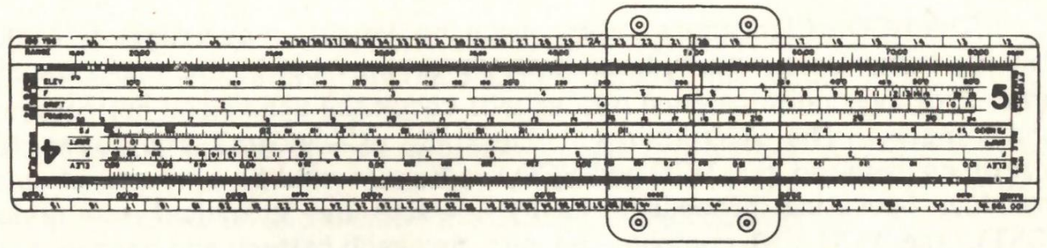


Figure 9. The graphical firing table (GFT) probably will be used by the battalion FDC computers.

Processing the Fire Mission

According to the present School thinking, a fire mission will be processed at the battalion FDC in the following manner:

When the mission is received, the assistant S3 will inspect the coordinates of the target and then issue his fire order. The mission will be fired with Alpha (105-mm howitzer) battery adjusting and both batteries firing for effect. The target will be plotted by both the HCO and the VCO. The officer or noncommissioned officer in charge will observe and check the plot.

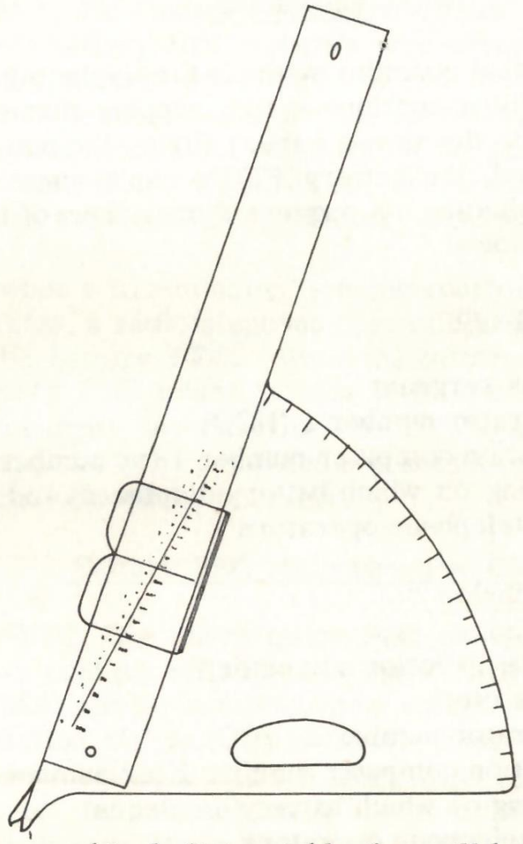


Figure 10. The graphical firing table fan will be used by the battery FDC.

The HCO will measure and announce the deflection and range to each battery computer concerned. Again, by observing the HCO, the supervisory officer or noncommissioned officer will check the announced deflections and ranges. The VCO also will check the HCO's data. The allowable tolerance between the HCO and VCO readings should be a matter of unit standing operating procedure (SOP). Using the graphical site table (GST), the VCO will compute the site for each battery and announce it to the computers when they ask for it. Because of the different caliber weapons, the VCO will have to use a different GST for each battery.

Both the HCO and the VCO will use range deflection fans and read ranges (in meters) and deflections. The computers, using GFT's will determine the elevation and time.

The 2 operations personnel, the computer number 3, and the 2 radiotelephone operators have not been mentioned as taking part in the fire mission. As previously stated, the two operations personnel probably will be engaged in operations activities, the computer number 3 is a relief computer, and the radiotelephone operators will be used to operate the communications net. They will be valuable in displacements, and will be available for relief when situations become temporarily stabilized.

Displacing

There are several possible methods for displacing the howitzer battalion while maintaining continuous fire support through fire direction. Two methods will be discussed here. First, the battalion FDC can be split in two. Second, the battery FDC's can assume control while the battalion FDC is displacing. A suggested breakdown of the battalion FDC into two echelons follows:

First Echelon
S3
operations sergeant
chart operator number 1 (HCO)
fire direction computer number 1 (or number 2, depending on which battery displaces) and number 3
two radiotelephone operators

Second Echelon
assistant S3
senior fire direction computer
operations clerk
chart operator number 2 (VCO)
fire direction computer number 2 (or number 1, depending on which battery displaces)
two radiotelephone operators

In the first echelon, the operations sergeant can temporarily act as a chart operator. In the second echelon, the senior fire direction computer can operate a chart.

In the second method of displacement--with battery FDC's controlling the missions--the battalion FDC will check the posting of charts with the batteries and then be available for displacement.

The Battery FDC

When the battalion is controlling the fires of the battery, the battery FDC is little more than a link in the communication chain. When the battery FDC is controlling fires, the installation is operationally larger, but numbers no more than five men. Normally there is no need to have the battery FDC located far from the pieces.

The full 9-man firing battery headquarters, including those who might be used in fire direction, consists of the following personnel: the executive officer, the assistant executive officer, the chief of firing battery, the fire direction computer, the chart operator, the instrument operator, the battery recorder, and 2 radiotelephone operators.

There are only three officers in the battery--the battery commander, the executive officer, and assistant executive officer. Concepts governing the functioning of battery fire direction are closely related to the responsibilities and operating procedures of the firing battery. Although the executive officer is responsible for the operation of the battery FDC, he must exercise close, personal command of the guns, supervising them habitually and consistently. Therefore, the executive officer should place the assistant executive in the battery FDC when a battery FDC is operating.

Generally, when a fire mission is being controlled by the battalion, only a chart operator, a radiotelephone operator, and the recorder should be required in the battery FDC. When the battery is controlling a fire mission, the battery FDC might include the assistant executive officer (who will be in charge), the chart operator (who acts as the HCO), the fire direction computer (who computes and acts as the VCO), the battery recorder, and a radiotelephone operator.

Battery FDC Maintains Two Charts

The battery FDC, like the battalion FDC, should maintain the standard two charts--a grid sheet firing chart and a battlemap vertical control chart. Battery SOP should establish how completely these charts will duplicate the battalion charts. Each battery must be able to fire using its own FDC when required. The battery FDC will not be expected to control the fire of the other battery in the battalion except during an emergency or when provisions have been made for such an operation.

Another consideration is ammunition accounting (with emphasis on control of lots for accuracy). This requires close coordination between

the battery recorder and the battery FDC. If the recorder, with his direct telephone to each howitzer section, is located with the FDC, close ammunition discipline is improved. The lot number should be specified for each mission fired. The recorder and the fire direction computer can keep a close count of the rounds in each section by lot number. They can direct the expenditure of small odd lots to preserve the larger lots for unobserved fires and massing missions. If the recorder and the FDC are separated, there is some repetition in the accounting, and there may be gaps in the records.

Considering all facets of the battery operation, the School tentatively has concluded that for maximum efficiency, it will be necessary to combine the battery FDC and the executive's post into a single installation.

Massing Fires

A question is certain to arise in an artilleryman's mind about the massing capabilities of the battalion. Massing two units of unlike calibers, such as the 105-mm and 155-mm howitzer batteries in the howitzer battalion, does not present serious problems. Battalions of unlike calibers are massed successfully when these units have common survey control and each battalion has its own registration corrections. The two batteries will be on common survey control. For the present, the School believes that separate registrations are required for the two batteries. Registrations with different charges and at different points throughout the battle zone will be conducted as desired and commensurate with the time and ammunition available. Limits imposed by requirements for security and surprise also must be considered.

Since both weapons in the battalion are howitzers, it is possible that experience factors can be developed that will permit applying information gained from a single (one caliber only) registration to both batteries. The Artillery and Missile School also will conduct research on the possibility of converting corrections determined with one caliber to corrections applicable to the other. When the field artillery data automatic computer (FADAC) becomes available in 1961, it is likely that registration of a single battery (of either caliber) will be sufficient for both weapons and for a number of charges.

The 4.2-inch mortar has a new status in the New Infantry Division. Tactical fire direction (the employment of firepower in regard to selecting targets; opening, suspending, or ceasing fire; and classes of fire) of the infantry mortars will be conducted by the direct support artillery, to meet the requirements of the battle group commander. Technical fire direction (the production of firing data for the mortar) will be handled in the mortar platoon FDC.

The Rocket/Howitzer Battalion

The rocket/howitzer battalion (general support) presents different problems than does the howitzer battalion (direct support).

The rocket/howitzer battalion contains an Honest John rocket battery and an 8-inch howitzer battery. The battalion FDC probably will act as a tactical FDC for the Honest John battery and as a technical FDC for the 8-inch battery. The 8-inch battery also has a full fire direction capability of its own. Further, the 8-inch battery can be split into two platoons (2 pieces each), each with a battery type FDC. If employed by platoon, the battalion, battery, or platoon FDC may be used to control fires. The difference in availability of personnel between the 8-inch battery FDC and the 105-mm and 155-mm howitzer battery FDC's is that the 8-inch units have one additional chart operator, fire direction computer, and radiotelephone operator. This added strength permits the two-platoon operation.

The Honest John battery has its own FDC and produces its own firing data. There are 4 computers and 1 radiotelephone operator in the battery FDC.

The New Division artillery organization has necessitated few changes in fire direction in the rocket/howitzer battalion but possibly has made some changes necessary in the howitzer battalions because of fewer personnel and mixed caliber weapons.

It appears that the answer to the direct support fire direction problem is to adopt a simple, two-chart system that will permit control by the battalion FDC. Since different calibers must be fired, and different GFT settings for the different batteries used, the range deflection fan and GFT rule probably will be used.

In the battery, the FDC and the executive's post probably should be combined to streamline the operation. Proven principles of fire direction computation have been retained. For emergency operations the battery must have the backup capability found with a two-chart system and may use the GFT fan.

Rapid adjustments and effective massing of fires are the objectives. The system discussed above will accomplish the mission. Let's Shoot!!!

A SIGNIFICANT QUOTATION

Continuous combat readiness means that the products of our materiel development and military training programs must constantly mesh with the changing requirements imposed by tactical evolution. This evolution has been greatly accelerated recently by the advent of nuclear firepower and long-range missiles. So must be the process of meeting its requirements.

General Bruce C. Clarke

COMMUNICATIONS IN THE NEW DIVISION ARTILLERY

Major Edward A. Brass
Department of Communication and Electronics

The timely and accurate delivery of artillery fires depends on the rapid receipt and dissemination of command control and firing data. The communication system organic to the New Division artillery contains the necessary means to satisfy these requirements. However, no one means of communication can be considered primary.

Although distances between units now are greater because of the necessity for dispersion, field wire remains an essential means of communications. Diagrams of wire systems are shown in figures 13 through 17.

A major innovation in the New Division artillery is the concentration of wire teams in the battalion headquarters and headquarters batteries. All battalion wire sections include 2 wire teams, 3 SB-22 switchboards and 4 switchboard operators. Each of the 2 wire teams consists of a chief and 4 wiremen. Transportation is provided by one 1/4-ton truck and three 3/4-ton trucks (one with a 3/4-ton trailer). The wire is laid with two RL-172 reel units. The table of organization and equipment (TOE) authorizes each battalion 18 miles of wire.

The firing batteries (105-mm, 155-mm, and 8-inch howitzers) have identical communication sections. Each contains a communication sections. Each contains a communications chief, one 5-man wire team, two SB-22 switchboards, and 2 switchboard operators. Vehicles include one 1/4-ton truck, one 3/4-ton truck, and a 3/4-ton trailer. One RL-172 reel unit is used to lay the wire. Eight miles of wire are authorized for each firing battery.

The Honest John battery communication section has a chief, two 5-man wire teams, two SB-22 switchboards, and 3 switchboard operators. Transportation is provided by one 1/4-ton and two 3/4-ton trucks and one 3/4-ton trailer. There are two RL-172 wire reels and 16 miles of wire.

Reel Unit RL-172

The reel unit RL-172 (fig 11) is a new item of equipment replacing the reel unit RL-31. The RL-172 is designed for use in the forward combat areas. It is driven by a 24-volt direct current electric motor. Power is furnished by the vehicle's electrical system. The RL-172 weighs approximately 110 pounds and can be mounted on the tail gate or in the bed of a 1/4-ton, 3/4-ton, or 2½-ton truck.

Another new item of equipment in the TOE is the electronic-equipment shelter S-144/G. Each battalion wire section is authorized one of these lightweight aluminum shelters used to protect switchboard installations from inclement weather. The 3/4-ton trailer authorized the wire section may be used to transport the shelter. Upon arriving in the

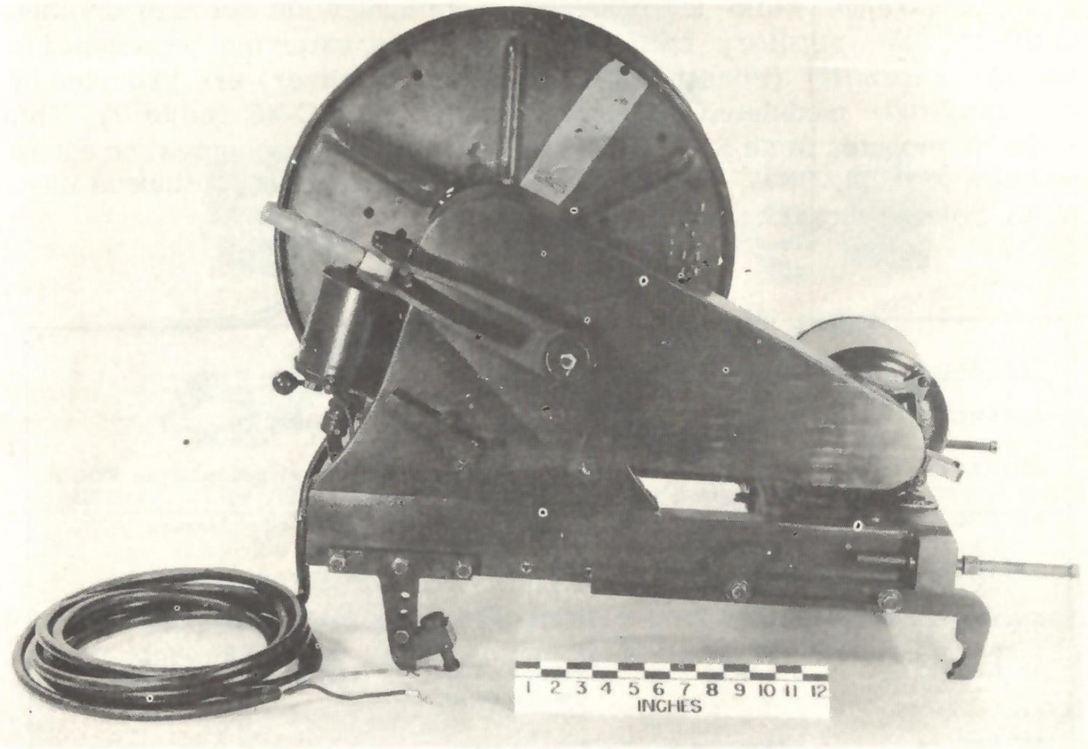


Figure 11. The reel unit RL-172 is powered by a 24-volt electric motor.

command post area, the trailer can be parked, and the truck which pulled it can be used for other purposes. The ideal place to mount the shelter is in the trailer, because, when it is mounted on a 3/4-ton truck, it occupies the entire truck bed. The S-144/G shelter looks like the S-89 shelter, which houses the AN/GRC-46 radio (ARTILLERY TRENDS, February 1959).

Radio

There are 120 frequency modulated (FM) channels available to the artillery. Ten channels at the upper end of the spectrum provide overlap for the infantry frequencies, and 10 channels at the lower end are for armor frequencies. A number of channels in the artillery band are allocated to Army aviation. Diagrams of radio systems are shown in figures 18 through 21.

Each howitzer battalion has three FM channels for internal use. Two channels are for fire direction (F1 and F2), and the third is for command use. The rocket/howitzer battalion has two FM channels for use in internal nets. One channel is for command use, and the other is for fire direction. With this allocation of internal channels, the primary responsibility for radio communication remains with the headquarters and headquarters battery.

Long-range radio facilities for communication between division artillery, the artillery battalions, and those batteries possessing a nuclear capability (Honest John and 8-inch howitzer) are provided by th amplitude modulated (AM) radio set AN/GRC-46 (table 7). This r dio is mounted in an S-89 electrical shelter, which occupies the entire bed of a 3/4-ton truck. The AN/GRC-46 can be used for continuous wave (CW), voice, or radioteletype transmissions.

Type Radio	Frequency in Megacycles	Range*	Principal User
AN/PRC-9	27 to 38.9	3-5 mi	Forward observer
AN/VRC-9	27 to 38.9	10-15 mi	Battery and battalion FDC's
AN/PRC-10	38 to 54.9	3-5 mi	Forward observers
AN/VRC-17	27 to 38.9	10-15 mi	Battery commanders
AN/VRQ-2	27 to 38.9	10-15 mi	Communication officers
AN/GRC-19	1.5 to 20	Voice - 50 mi CW - -100 mi	Meteorological section
AN/VRC-24	225 to 399.9	Line of sight	Air control teams
AN/GRC-46	1.5 to 20	Voice - 50 mi CW - - 100 mi	Battalion headquarters, 8" & Honest John batteries
AN/GRR-5	1.5 to 18	Receiver only	Every battery

*Depends on terrain, type of antenna, siting and operational conditions.

Table 7. Radio sets organic to the New Division artillery.

Each battery in the division artillery is equipped with a radio receiver AN/GRR-5 to monitor the division warning net (table 7).

All headquarters and headquarters batteries plus those batteries with a nuclear capability have an additional AN/GRR-5 to monitor the corps artillery meteorological net. The corps observation battalion and each division artillery transmit meteorological information on this net on a time/share basis. The corps artillery communication officer coordinates the transmission times of the stations operating in this net. Meteorological messages pertinent to a unit's geographical area of operation are disseminated over local means to all echelons. Each howitzer battalion and division artillery headquarters battery now has an organic air control team which provides the US Air Force tactical air controller with the necessary communication equipment to direct close-in tactical air strikes. The radio set AN/VRC-24 (fig 12 and table 7) recently has been adopted as a standard item of equipment, replacing the radio set AN/ARC-27. The AN/VRC-24 was designed specifically as a vehicle radio for communicating with high-performance aircraft.

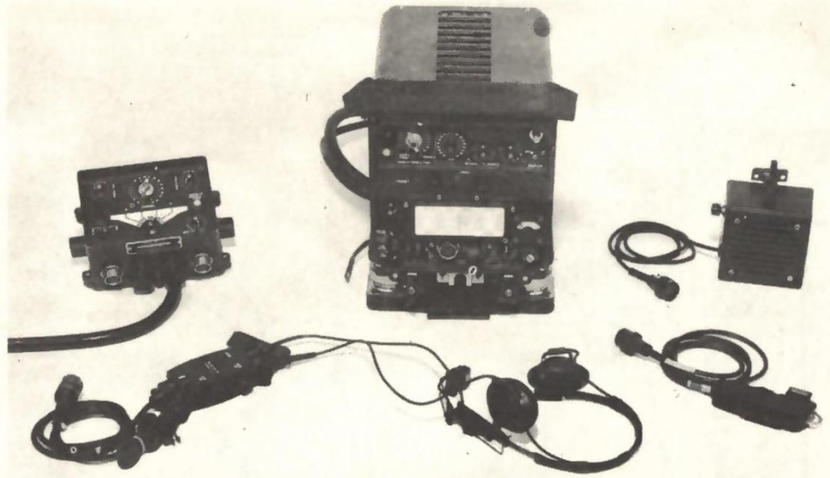


Figure 12. The AN/VRC-24 radio is authorized for the air control team.

The set may be mounted in either a 1/4-ton or 3/4-ton truck.

The antenna set RC-292 (ARTILLERY TRENDS, October 1958) will be issued to each battery. The 30-foot elevated antenna extends the range of standard artillery radios. Two men can erect this antenna in 12 to 15 minutes.

Fire Mission

The howitzer battalion fire direction center (FDC) will compute most of the fire missions. The battalion computer will call the battery computer over a direct telephone line or a FM radio. While the battery computer reads back the firing data, the battery recorder will enter the mission on his recorder's sheet. At the direction of the executive officer or assistant executive officer, the recorder will telephone the fire mission to the howitzer sections.

A wire team from the howitzer battalion headquarters battery will install a forward switchboard (SB-22) between the forward observers and the battalion FDC. Two lines will be laid between this switchboard and the battalion FDC. A phantom circuit will be added to provide a third circuit (fig 14).

Future communication equipment will be made smaller by using transistors and modular construction. FM radios will have greater range and additional channels common to all combat arms. Single sideband equipment with a central switching facility is being developed. Multichannel radio relay equipment and the use of tropospheric scatter is being considered for artillery application. On-line cryptographic equipment will be available for use with radio and landline teletype systems. When accepted, these items will make the artillery communication system more effective.

The artillery commanders of the New Division artillery will have a flexible communication system. This system permits the immediate, continuous relay of command control and firing data.

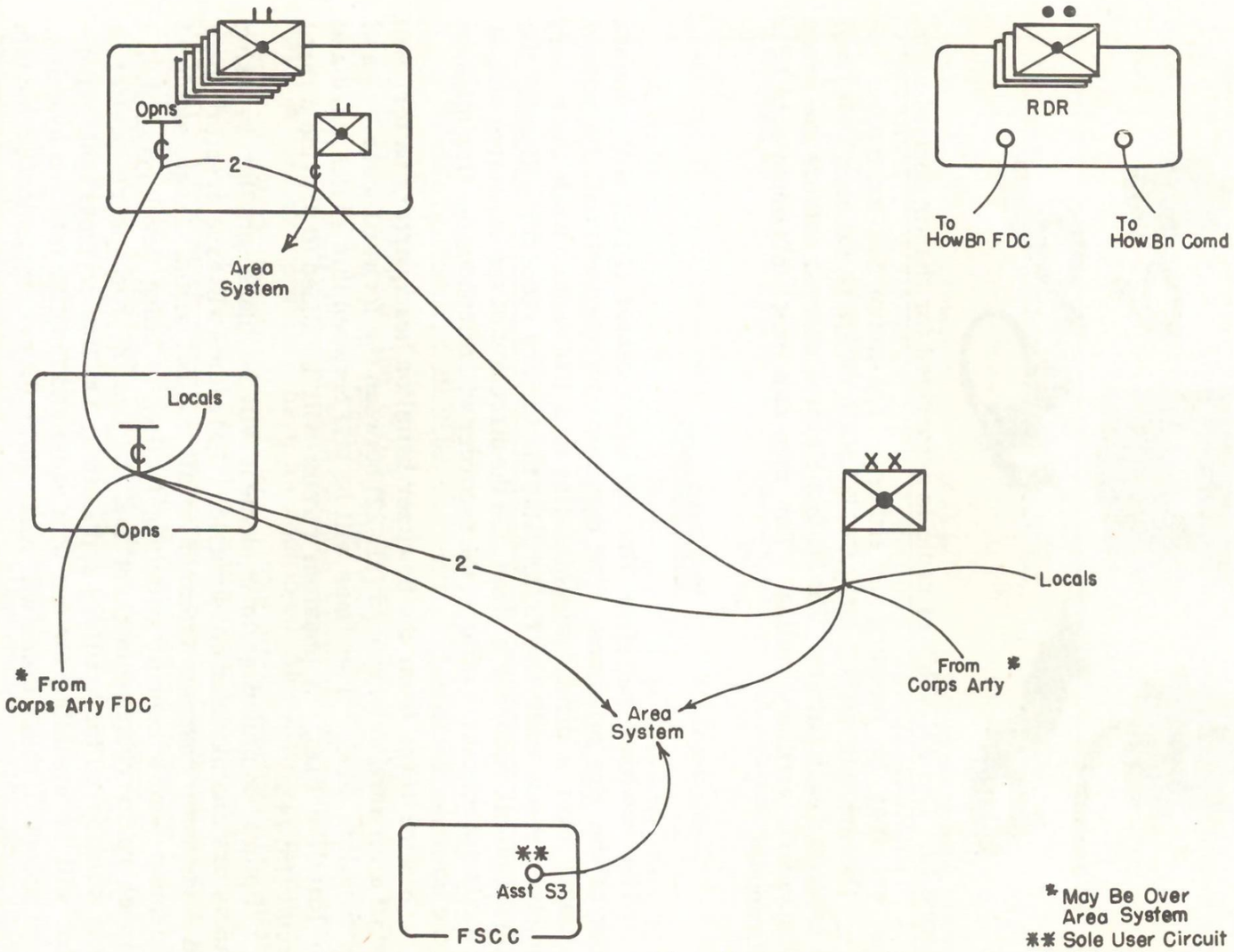


Figure 13. Wire system, New Division artillery.

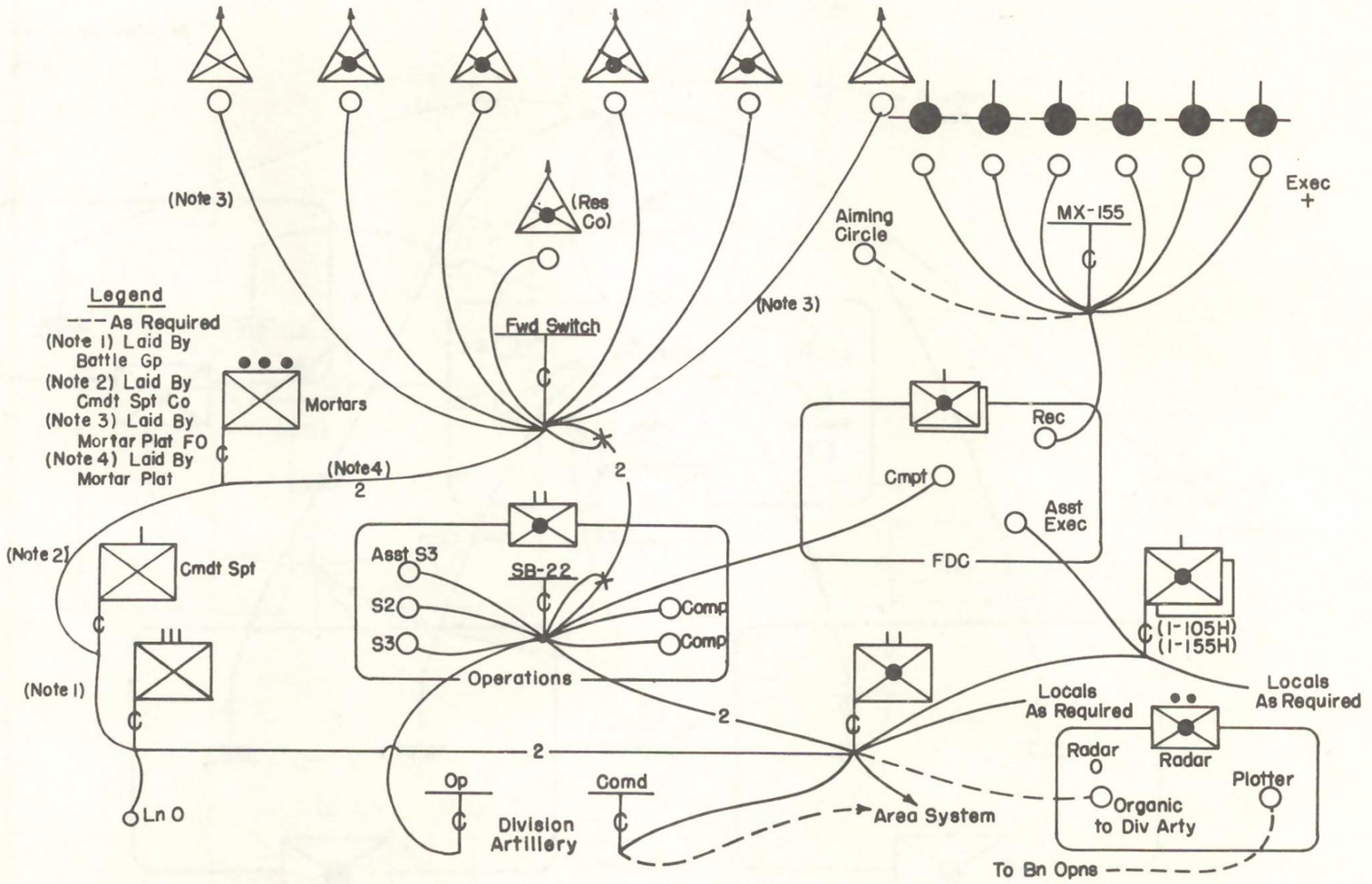


Figure 14. Wire system, howitzer battalion, New Division artillery.

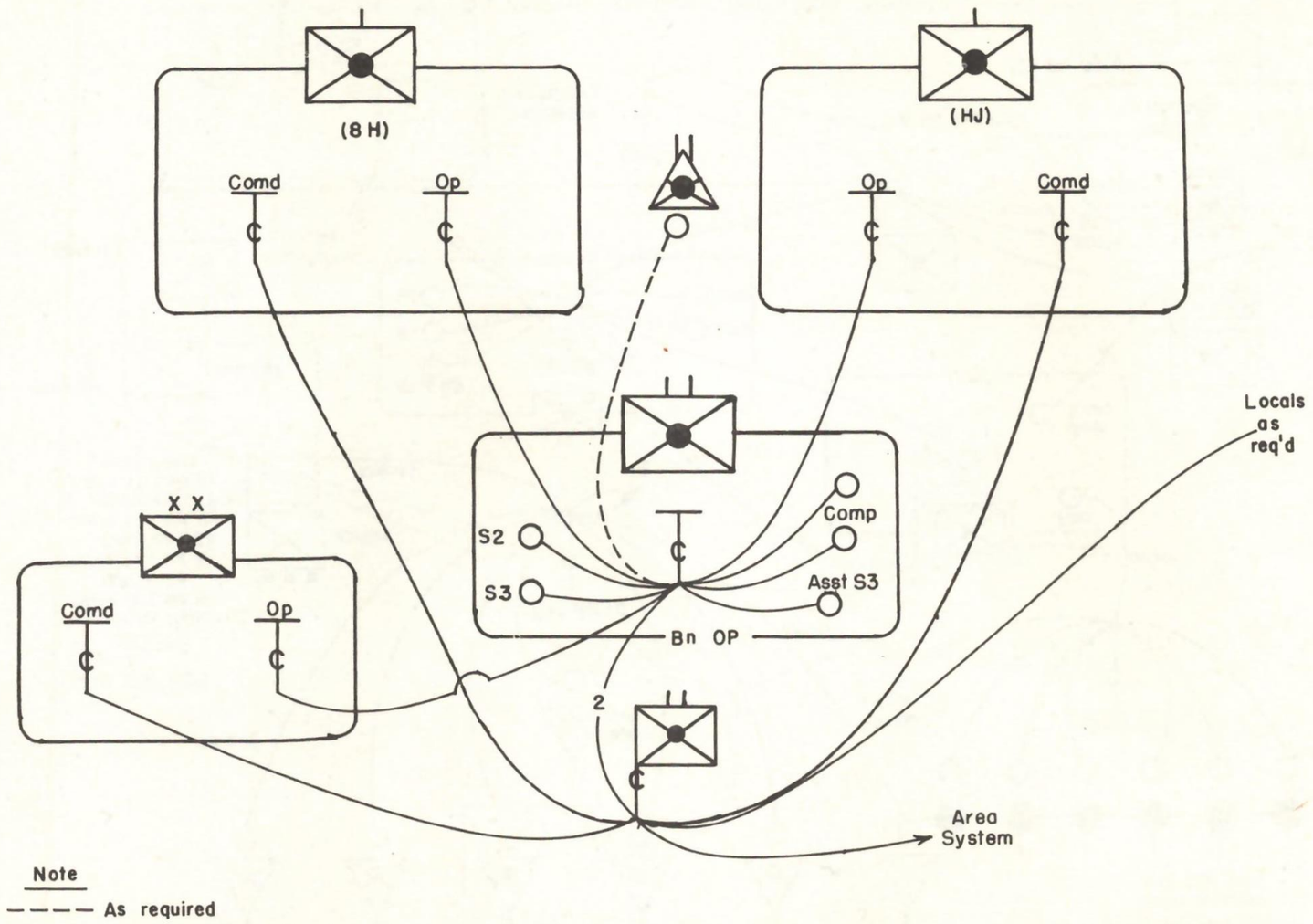


Figure 15. Wire system, rocket/howitzer battalion, New Division artillery.

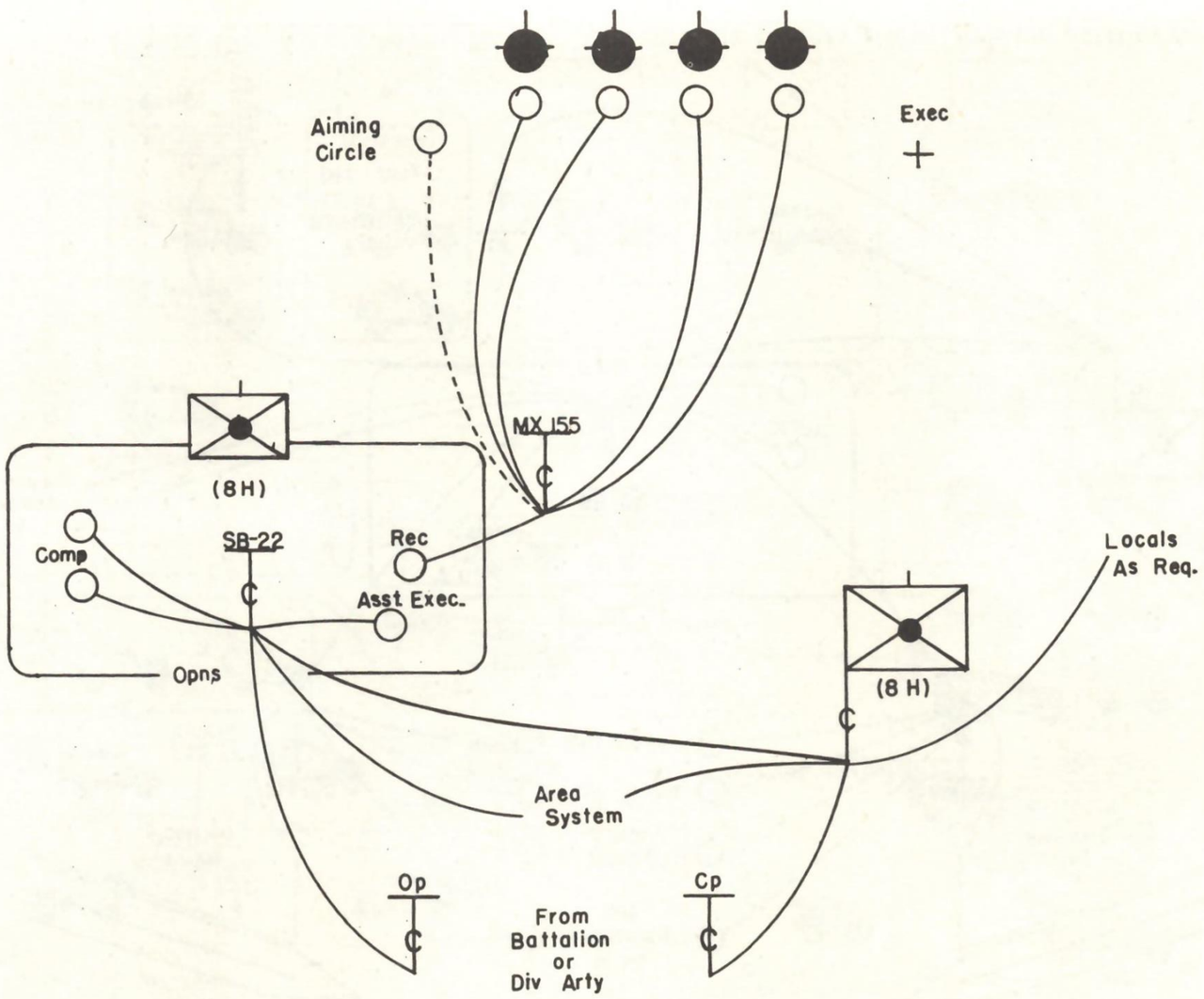


Figure 16. Wire system, 8-inch howitzer battery, New Division artillery.

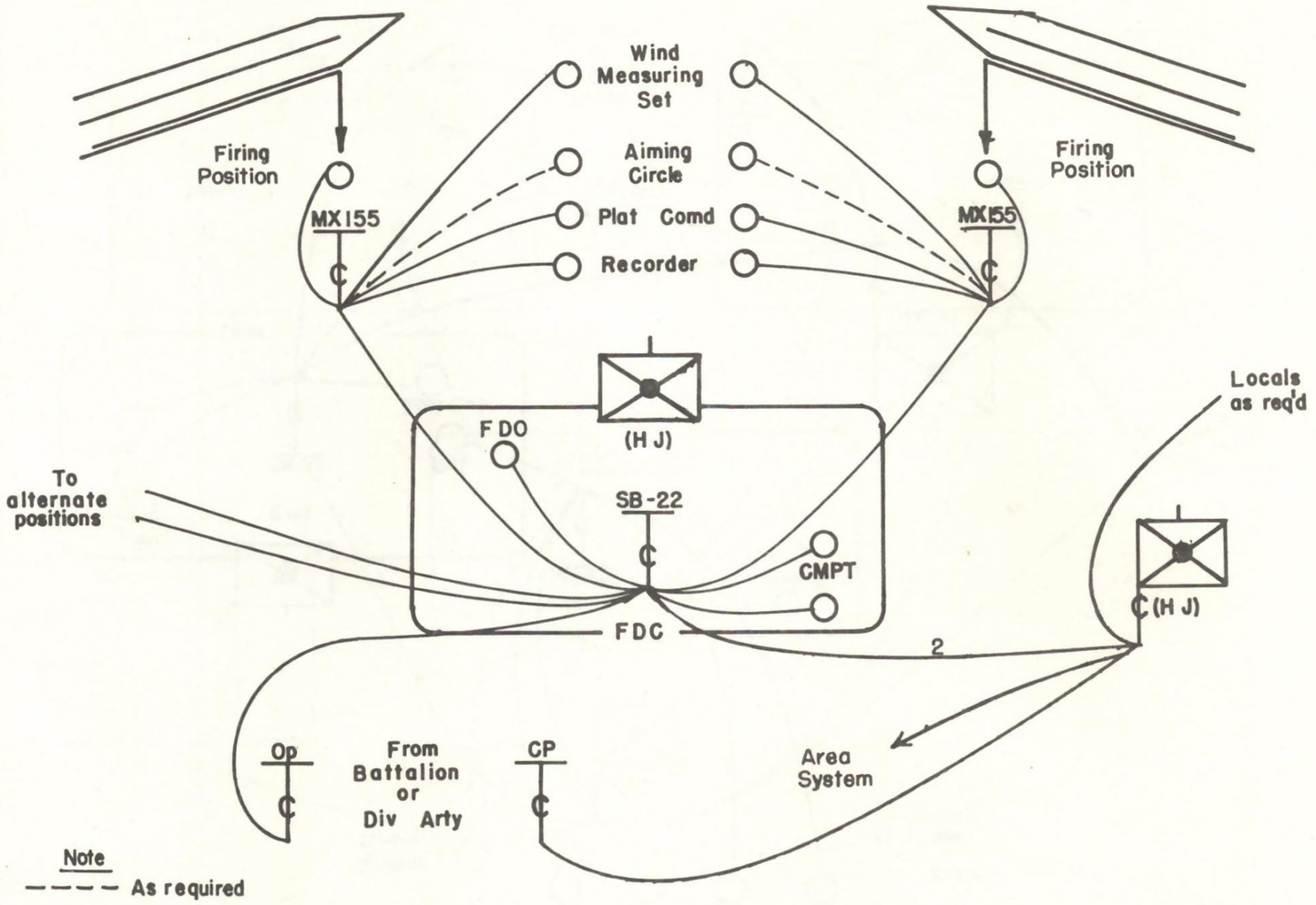


Figure 17. Wire system, Honest John missile battery, New Division artillery.

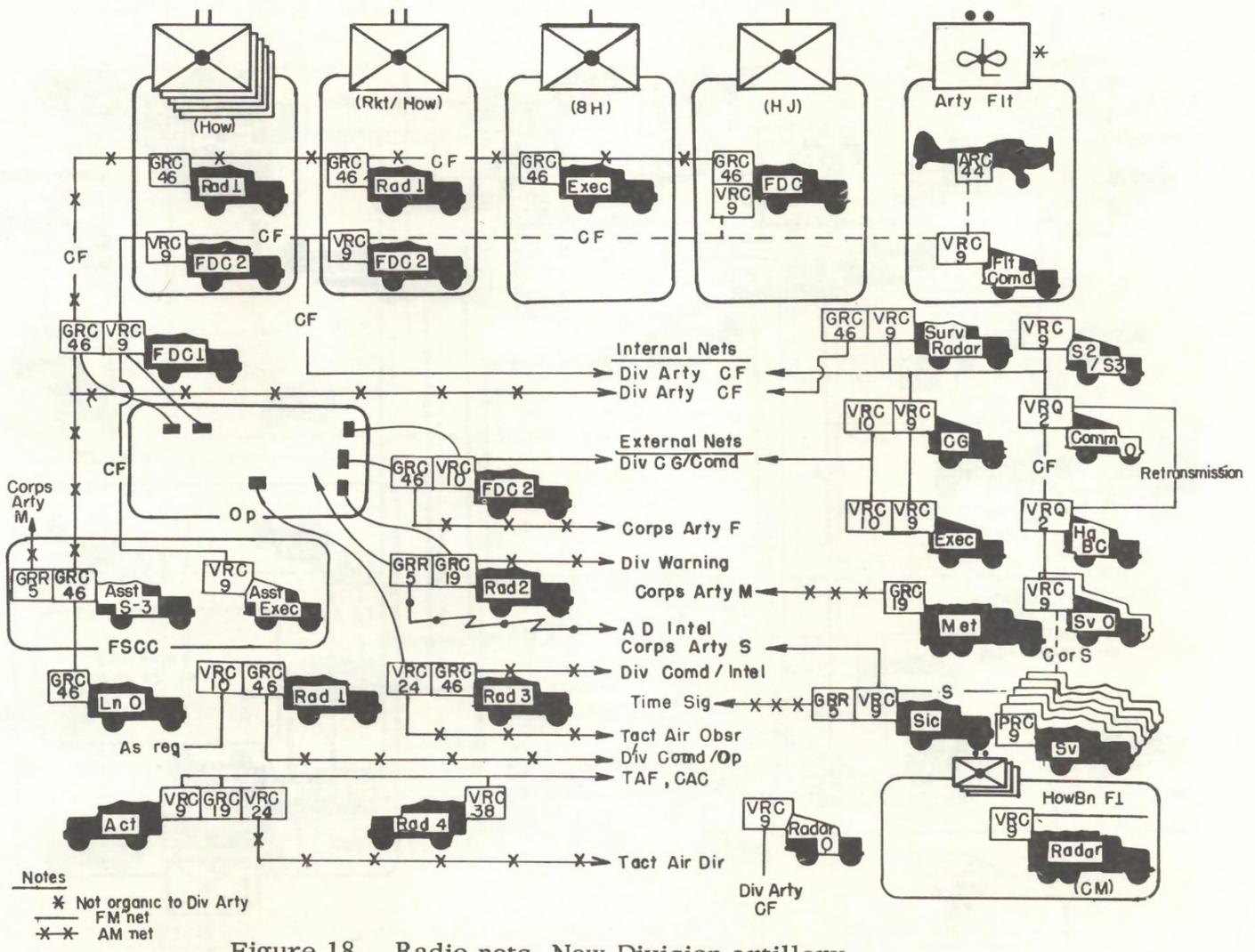


Figure 18. Radio nets, New Division artillery.

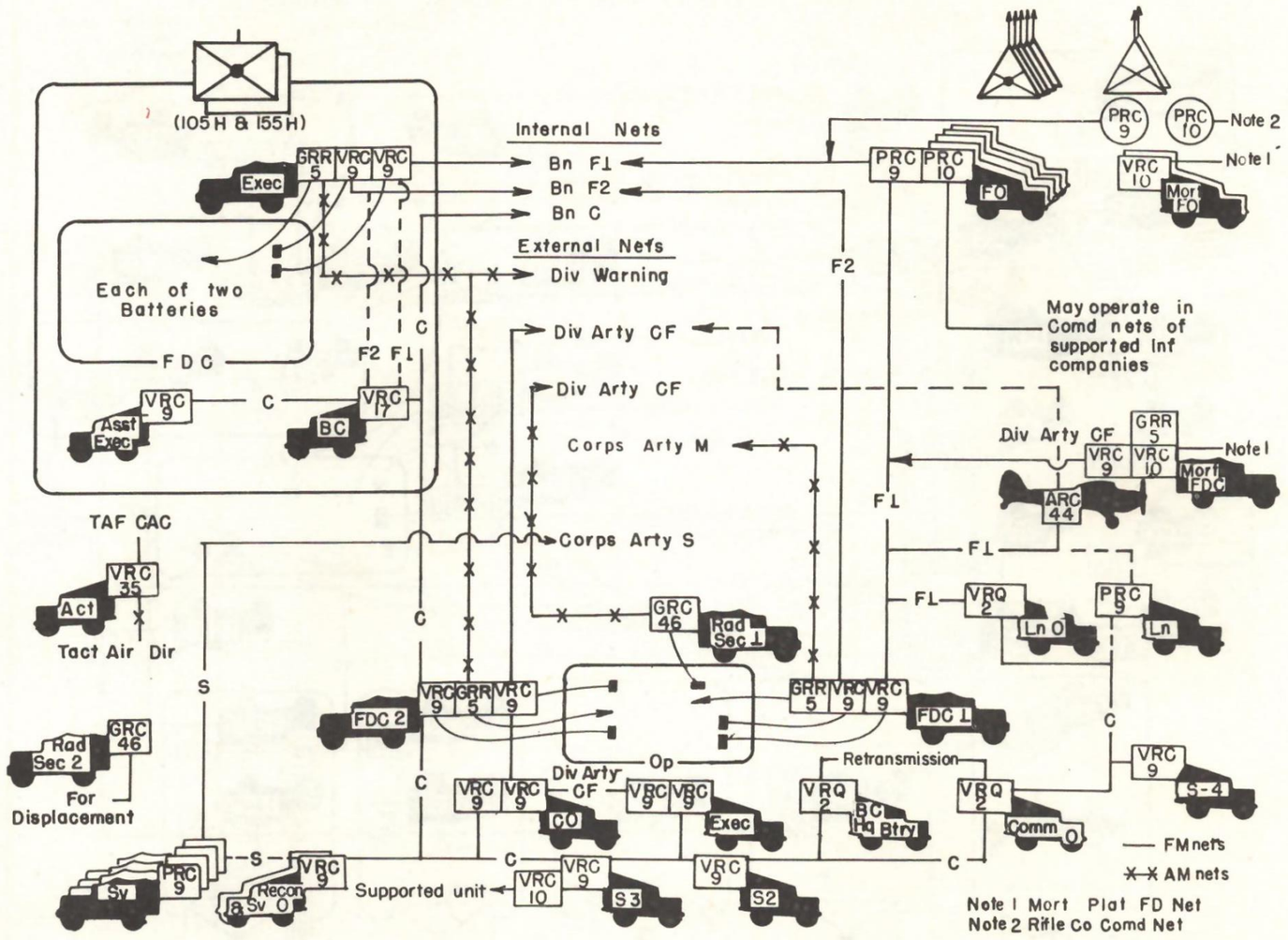


Figure 19. Radio net, howitzer battalion (towed), New Division artillery.

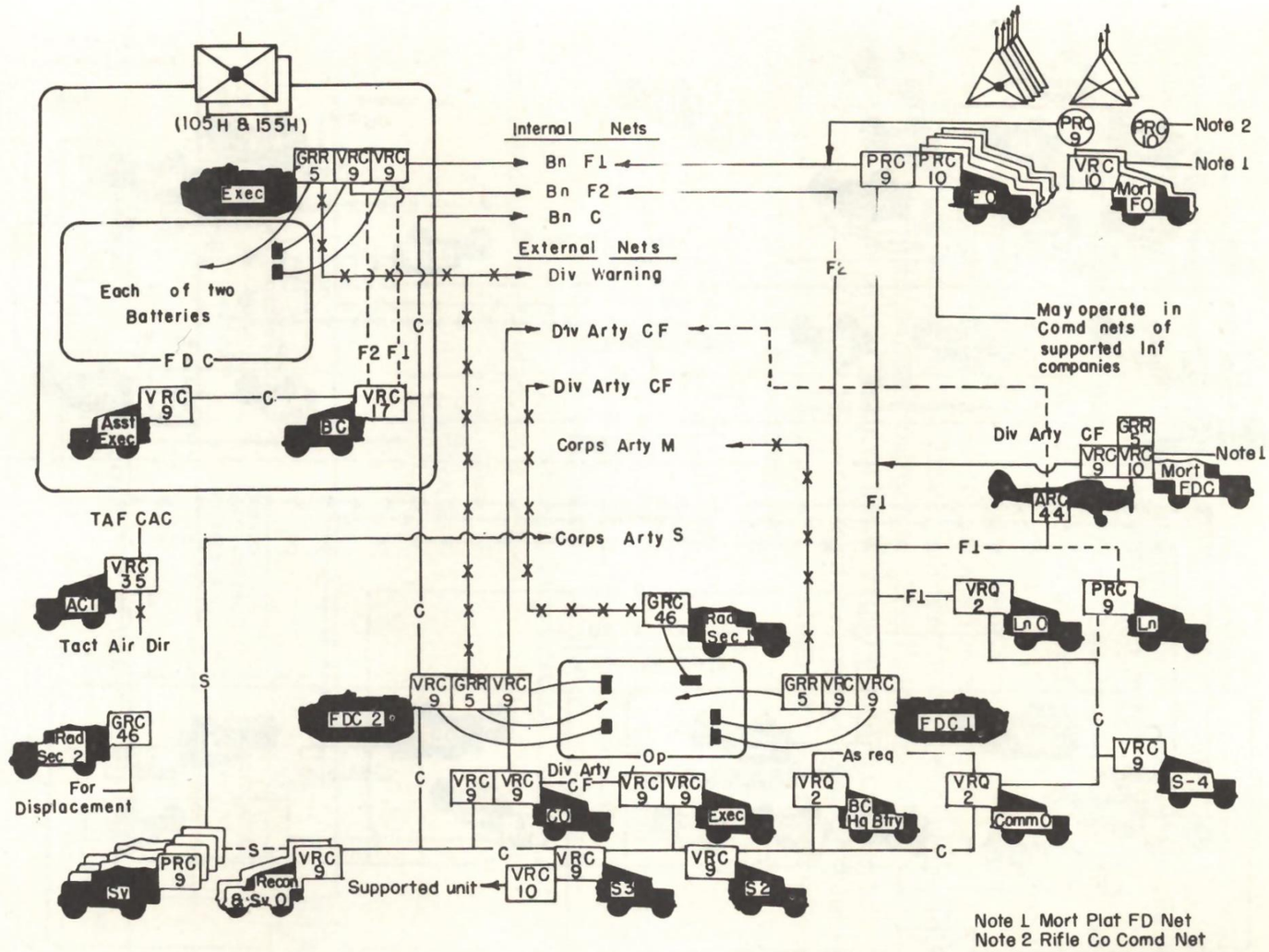


Figure 20. Radio net, howitzer battalion (SP), New Division artillery.

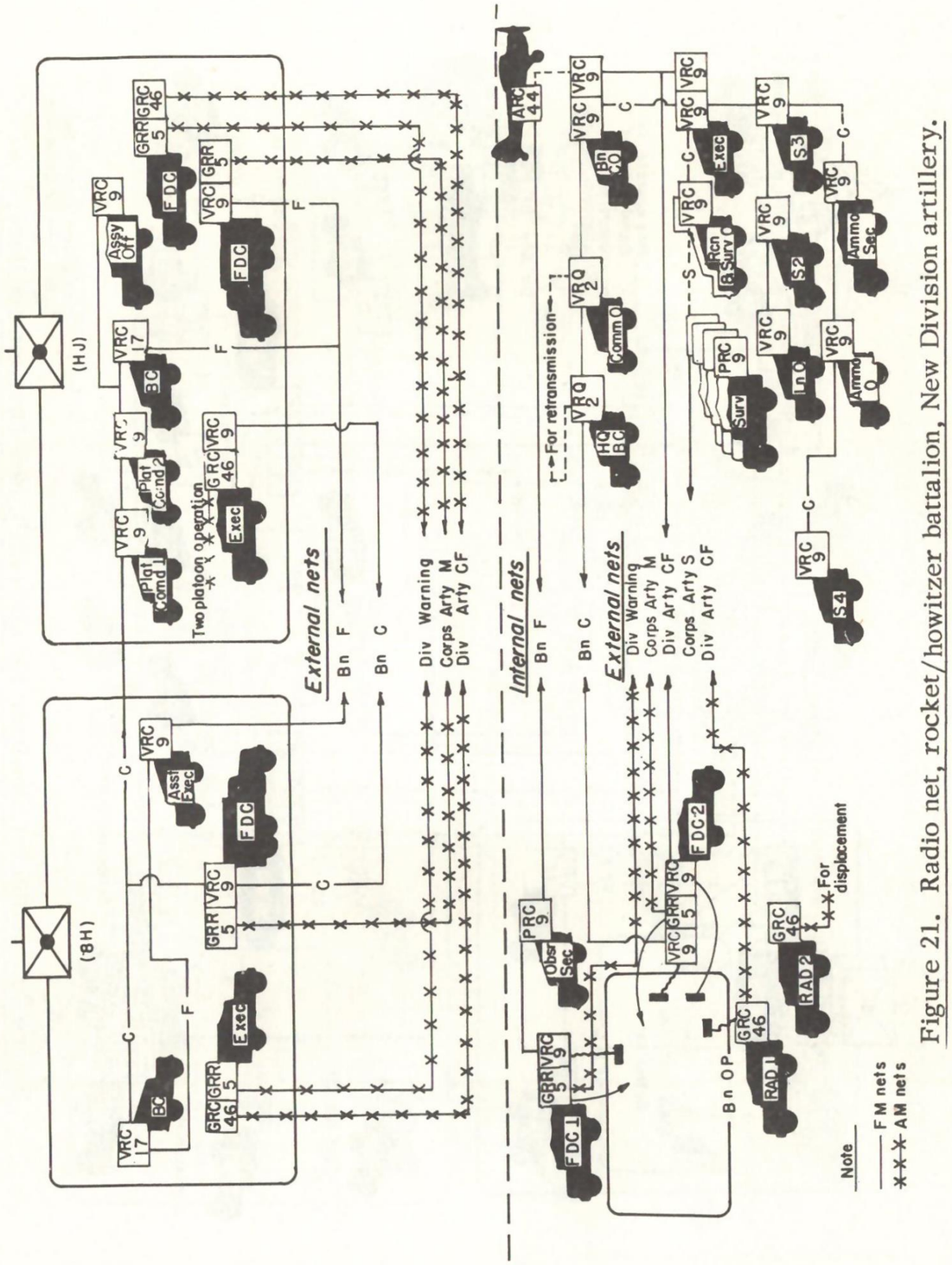


Figure 21. Radio net, rocket/howitzer battalion, New Division artillery.

TARGET ACQUISITION IN THE NEW DIVISION ARTILLERY

Major James F. Holcomb, Infantry
Department of Target Acquisition

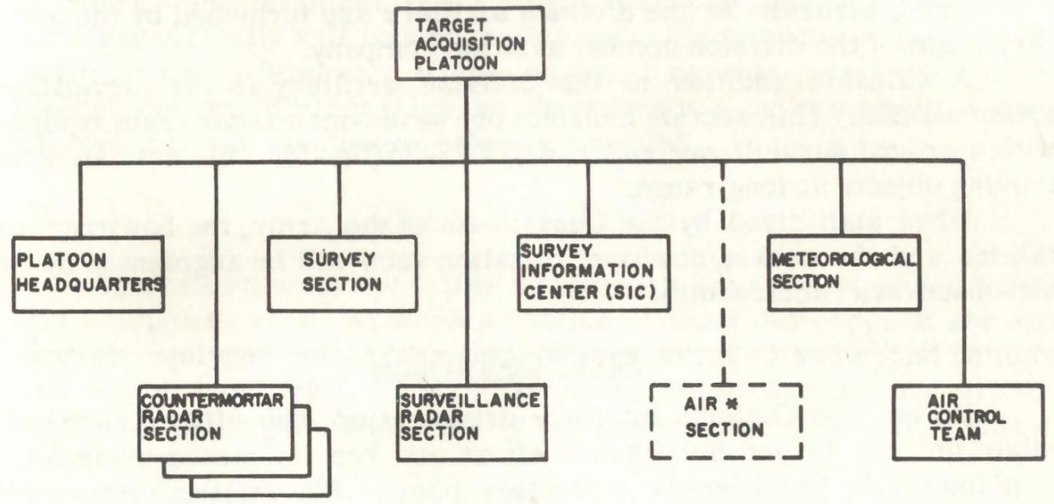
The maximum effectiveness of the New Division artillery will be achieved only if the artillery can successfully acquire targets. This article discusses the organization and equipment included in the New Division artillery to provide accurate and timely target data.

A target acquisition platoon is now organic to the division artillery headquarters battery (fig 22), to each of the five howitzer battalions (fig 23), and to the rocket/howitzer battalion (fig 24). At the battalion level, the platoon leader is the reconnaissance and survey officer. At division artillery the assistant S2 commands the platoon.

A major innovation is the location of the forward observer sections in the battalion headquarters batteries. The howitzer battalions have 1 observer for each of the infantry battle group's 5 rifle companies. The rocket/howitzer battalion has one forward observer section. All observer sections are authorized 1 lieutenant and 2 enlisted men (a reconnaissance sergeant and a radiotelephone operator).

Air Control Team

An air control team is included in the target acquisition platoon of the division artillery headquarters battery and in the target acquisition platoons of the five howitzer battalions. Each team contains the necessary radios, operators, and vehicles required by the US Air Force tactical air controller to direct air strikes.



* FROM THE DIVISION AVIATION COMPANY.

Figure 22. Target acquisition platoon of the division artillery headquarters battery.

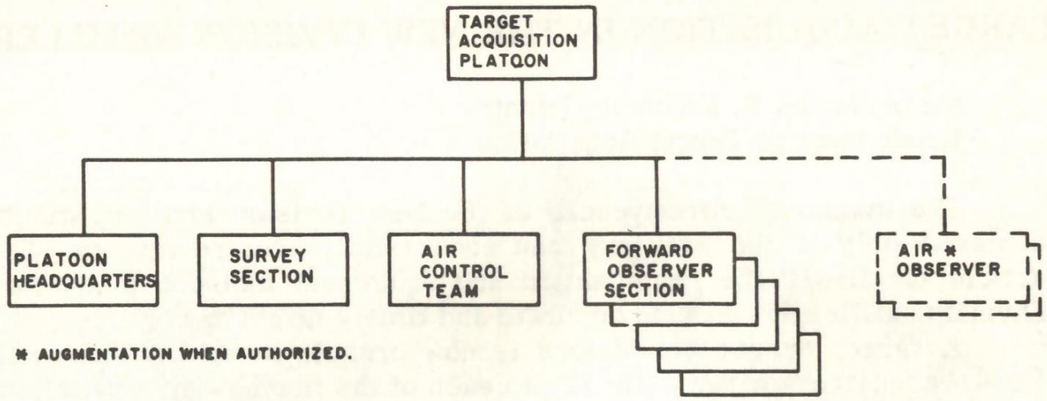


Figure 23. Target acquisition platoon of the howitzer battalions.

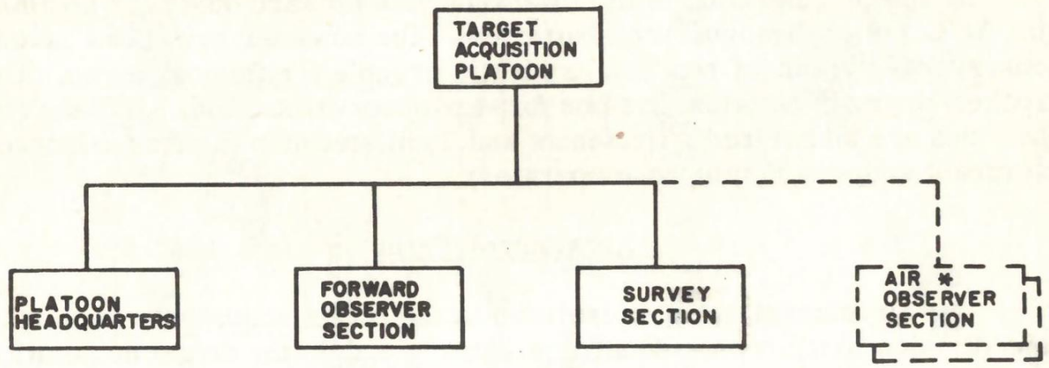


Figure 24. Target acquisition platoon of the rocket/howitzer battalion.

Army aircraft for the division artillery are furnished by the artillery flight of the division combat aviation company.

A valuable addition to the division artillery is the surveillance radar section. This section consists of a seven-man radar team equipped with a ground surveillance radar, AN/TPS-25 (fig 25). This set can detect moving objects at long range.

When authorized by the Department of the Army, the howitzer battalions and the rocket/howitzer battalion each will be augmented by two air observers (lieutenants).

S2 the Coordinator

In the New Division artillery organization, one officer is responsible for the target intelligence effort and has the means available to implement the intelligence collection plan. Placing the responsibility with 1 officer is possible because target acquisition and related functions have been grouped together in 1 platoon under the S2's supervision. Now the division artillery target acquisition elements are more effectively coordinated.

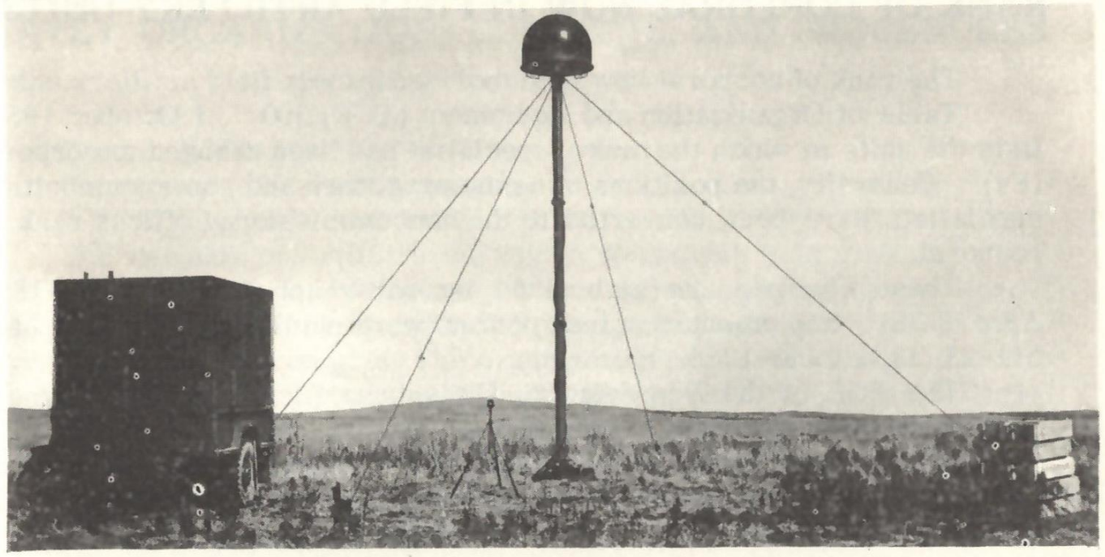


Figure 25. The radar set AN/TPS-25.

The S3, the reconnaissance and survey officer, and the communication officer also have an interest in the activities of the target acquisition platoons. Each participates in the planning of the platoon's operations.

Flexibility is another advantage of the platoon organization. Target information can be reported directly to the S2, the division artillery fire direction center (FDC), the battalions, or the firing batteries. Where the report will go depends on which channel best fits the situation. It is expected that target location information normally will be reported directly to the division artillery FDC or a battalion FDC.

Other advantages of the platoon organization are unity and economy of effort. For example, one forward observer section in the howitzer battalion normally will be assigned to each rifle company of the supported battle group. However, if the situation requires, the battalion commander can rapidly reassign the observers to a tank company, a reconnaissance troop, or wherever they are needed.

Drones in the Future

The new organization makes it possible to employ new target acquisition equipment as it becomes available. Under development are drone aircraft equipped with radar and various infrared and aerial cameras. The target acquisition platoons can accept the drones, or, if a platoon is too small, the organization readily can be expanded into a target acquisition battery.

The artillery now has an organization constituted solely to acquire targets. Such an organization emphasizes to artillerymen and others the vital need of the artillery to be able to perform complete target acquisition. The target acquisition platoon is a forward step on the road to the ultimate goal of full realization of the firepower potential available to the commander.

RANK OF CORPORAL NOW IN FIELD ARTILLERY UNITS

The rank of corporal now is authorized in most field artillery units.

Table of Organization and Equipment (TOE) 300-7, 1 October 1958, lists the units in which the rank of specialist has been changed to corporal (E4). Generally, the positions of assistant gunner and some ammunition specialists have been converted to the noncommissioned officer rank of corporal.

These changes are authorized by paragraph 7b(2), change 18 to AR 611-201. Implementation instructions were published in DA Circular 611-23, 13 October 1958.

The TOE of the New Infantry Division artillery will authorize the rank of corporal for the assistant gunner.

The reinstatement of the corporal rank provides the required continuity in the progression of the noncommissioned officer rank in the field artillery.

A GEM FOR THE CHIEF OF FIRING BATTERY

During the early days of our first winter in Korea, our batteries experienced difficulty in shifting trails because the gun trails froze to the trail logs. To prevent this, one battery wrapped burlap around the trail logs, and then applied a heavy coat of general purpose grease. The burlap absorbed the grease and held it in place; the grease prevented the trails from freezing to the trail logs. The plan worked so well that all the batteries adopted it.

--Submitted by Mr Howard P. Rice
Dept of TL&NRI, USAAMS

A HISTORIC ARTILLERY FIRST

The first American artillery round in World War I was fired by Battery "C," 6th Field Artillery Regiment, on 23 October 1917.

Don't get caught in a "bind" each spring for retirement points or qualification for promotion--continue your Extension Course work during the summer and fall.

SURVEY ORGANIZATION, CONCEPTS, AND PROCEDURES

Captain Eddie Manns
Department of Target Acquisition

The mission of artillery survey is to provide field artillery units with survey control within prescribed accuracies, insuring that the weapons and the target-seeking agencies are located with reference to each other, and to a common grid. The organization of the New Division artillery has not affected the scope of this mission. However, it has materially affected the procedures necessary to achieve unity of control.

Units below battalion level are not authorized survey personnel. This is a major change from the ROCID and Triangular Division artillery organizations. Another change is that the division artillery headquarters battery has 1 survey platoon, consisting of 33 personnel, organized as follows: a chief surveyor, a driver, a 4-man survey information center, three 9-man survey parties. The platoon is under the direct supervision of the division artillery survey officer. The survey parties are equipped with the latest items of survey equipment, including the T2 theodolite, survey set third order (fig 26), and tellurometer (fig 27). Because of this organization and equipment, survey control across the division front can be accomplished in approximately half the time previously required.

Tellurometer

The tellurometer has greatly increased the speed with which the division artillery can perform a survey. It takes approximately 30 minutes to measure a single distance with the tellurometer. This is much shorter than the time required using former systems.

The tellurometer (fig 27) is an electronic device which measures slant distances with extreme precision. The system authorized at division artillery level consists of a master unit and two remote units. Measurements can be made during darkness, and under all other conditions of poor visibility; however, electrical line of sight must be established for each measurement.

A built-in duplex radiotelephone circuit with a rated range of 65 miles is included in the tellurometer system. The master and remote instruments are similar but are not interchangeable. Complete station equipment for either the master station or the remote stations weighs approximately 85 pounds and can be transported manually in carrying cases. The operating range of the tellurometer is from 1/10 mile to 40 miles, with an accuracy exceeding the 1:3000 overall accuracy required by the division artillery.

The battalion, as mentioned previously, is the lowest level at which survey personnel are authorized. The survey section of each battalion consists of 1 officer and 17 enlisted men. The section is organized into

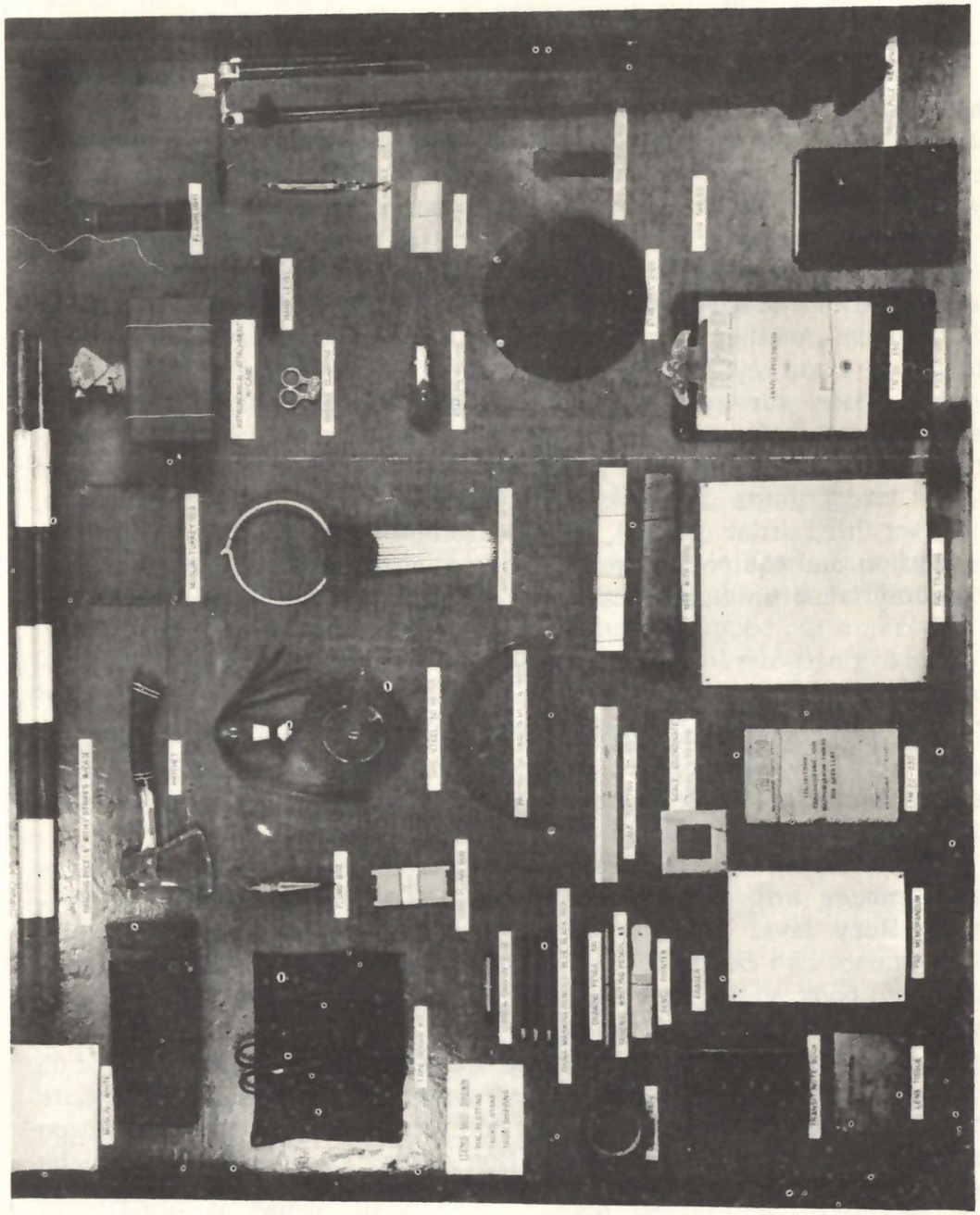


Figure 26. The survey set third order formerly was known as survey set number 17.

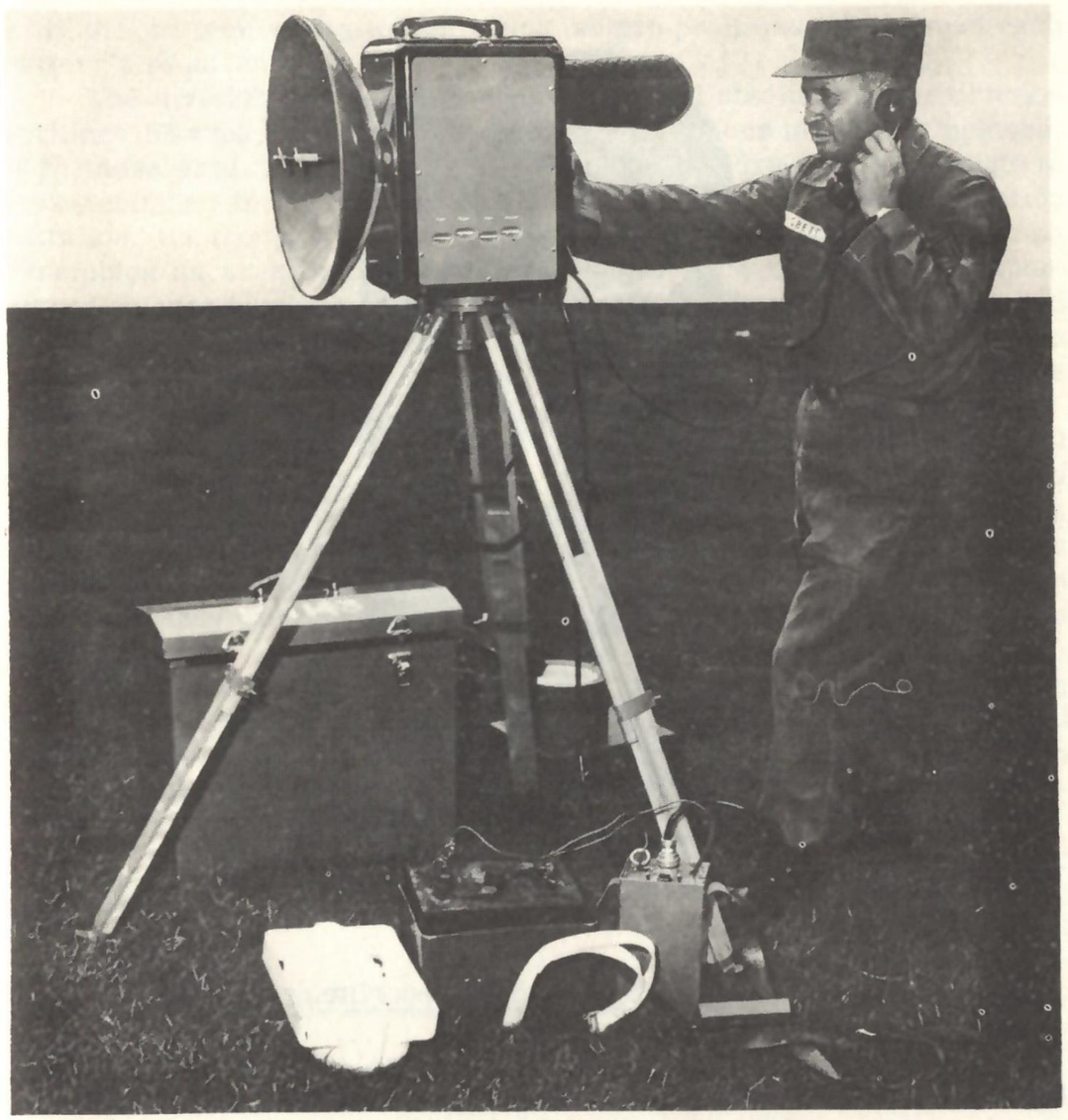


Figure 27. The tellurometer can measure a single distance in approximately 30 minutes.

two 8-man survey parties supervised by a chief surveyor. Each party is equipped with a T16 theodolite (fig 28) and a survey set third order (fig 26).

The concept of centralizing survey at battalion level provides--

(1) Uniformity in training and standardization of procedures.

(2) Reduction of duplicated planning effort. Surveys are planned at battalion level, thus providing flexibility in employing the survey parties.

(3) Unity of command. All surveyors now are under the control of the battalion survey officer. Therefore, a coordinated survey plan can be implemented rapidly.

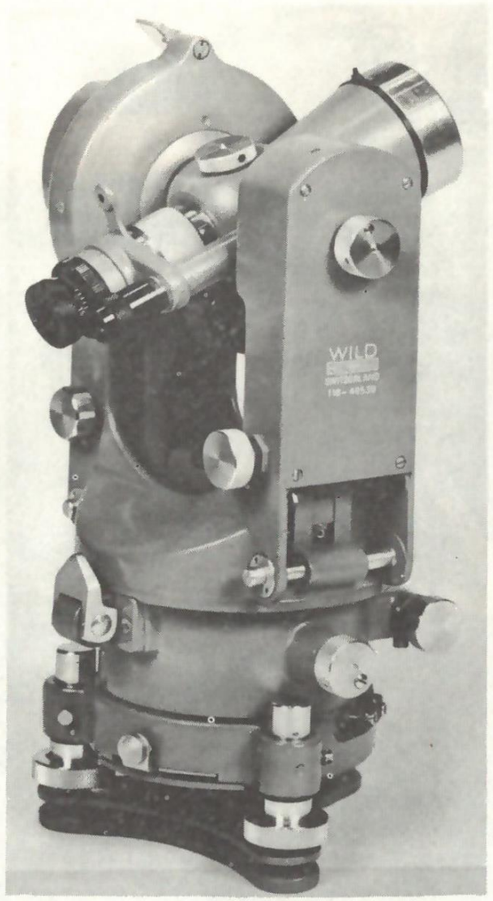


Figure 28. The T16 theodolite.

(4) More survey accuracy because of the use of the T16 theodolite and the survey set third order. This equipment enables all surveys to be performed to a minimum prescribed accuracy of 1:1000 (the prescribed battery accuracy of 1:500 has been eliminated). A trained surveyor should easily achieve this accuracy.

The battery depends on the battalion for survey control. Therefore, the battalion survey officer continuously must be aware of the tactical situation. To facilitate survey planning, he must be able to anticipate the requirements of the batteries.

Planning and Field Work

The changes in organization and equipment affects the concept of survey planning and the execution of field work. A common grid should be established on which the battery centers and the target area bases are located with respect to a common survey control point. Close coordination is needed between the battalion S3 and the survey officer to permit rapid establishment of survey control. The survey officer, in coordination

with the battery commanders, must select positions which meet each battery's requirements.

The division artillery survey officer will obtain from the division artillery S3 areas in which each of the six battalions might be employed. With these areas marked on a map, he plots the survey control points to be established in the division sector by the corps artillery observation battalion. He then can formulate the division artillery survey plan which resembles an area communications system. Each battalion then is assigned an area in which to survey, with starting survey control furnished by the parties from the division artillery. The battalion survey officers receive their respective battery areas from the battalion S3, or in some cases, directly from the battery commanders.

The division artillery furnishes each battalion a survey control point close to the battalion area, and the battalion survey parties extend the survey to the firing positions and observation posts. Battery centers are established at intervals of approximately 3,000 to 5,000 meters throughout the division sector. When these battery centers have been surveyed, they can be used by any artillery unit operating in the division area.

The increased survey capability at division artillery and battalion levels centralizes the survey effort, and emphasizes survey planning and coordination. It provides the field artillery units of the New Division artillery with rapid and accurate survey control.

A GEM FOR THE FIRE DIRECTION CENTER

If the deflection graduations on your GFT fans are wearing off, here's how to make them permanent. Place the fan upside down on a flat surface, and stick a pin in the fan vertex. Aline a straightedge between the pin and the center of the graduation. Scribe the fan along the straightedge with a sharp point (a sharp nail or a heated knife blade will do); then fill the graduation with a touch of black paint.

--Submitted by 1st Lt John E. Rudzki
Btry E, 1st How Bn, 2d Arty, APO 34, N. Y.

Going to have some extra time on your hands? Want an extra subcourse on hand?

Write for one--Extension Course Division
Fort Sill, Oklahoma

METEOROLOGICAL DATA FOR PREDICTING FALLOUT

Chief Warrant Officer Garland C. Goodman
Department of Target Acquisition

The possibility of nuclear warfare has necessitated the establishment of a radiological defense center (RADC) within the infantry division. This staff section is responsible for the prediction of nuclear fallout caused by enemy attacks, while the fire support coordination center (FSCC) continues to prepare fallout data resulting from nuclear attacks delivered by friendly forces. The RADC is located within or close to the division FSCC (DA Training Circular 101-1, 9 Dec 58). Since current meteorological data is the basic information required for predicting fallout patterns, the division artillery meteorological section has been assigned the additional responsibility of providing this information.

The meteorological section will transmit weather messages by radio. The FSCC will monitor the corps meteorological net and record and decode the messages. The FSCC will then pass on the required data to the RADC.

Data Required

The division meteorological section must be prepared to provide data for fallout prediction by furnishing two additional messages to the division and corps FSCC's.

One message must include wind speed (to the nearest mile per hour) and wind direction (to the nearest 100 mils) in 6,000-foot increments to the 102,000-foot level or to the bursting altitude of the balloon, whichever is lower. The minimum acceptable altitude is 78,000 feet. The observation schedule requires that readings be made at 0600, 1200, 1800, and 2400 hours Greenwich Central Time (GCT).

The second message requires readings to the 60,000-foot level 8 times a day. The minimum acceptable altitude is 48,000 feet. The observation schedule is-- 0200, 0400, 0800, 1000, 1400, 1600, 2000, and 2200 hours GCT.

In addition to wind speed and wind direction which are reported in 6,000-foot increments, other data at significant levels is required. A significant level is any level in the atmosphere where major atmospheric changes occur. Data which must be recorded and reported includes air pressure, temperature, and relative humidity.

Weather data requirements should be rotated among the several division artillery meteorological sections within the corps artillery. This will reduce the burden on any one section and keep each section proficient in determining the data.

Meteorological Section Strengthened

A long-range radio set and an intermediate-speed radio operator have been added to the division artillery meteorological section to fulfill the additional fallout prediction responsibility. The section now contains a warrant officer and 14 enlisted men.

To provide the meteorological section with an organic, rapid means of disseminating messages, the section is now authorized an AN/GRC-19 radio. This amplitude modulated (AM) set is mounted in a 2½-ton shop van truck. It has a rated voice range of 50 miles and will enable the meteorological section to broadcast in the corps artillery meteorological net. The portable, battery-operated radio receiver AN/GRR-5 will be used in the battery, battalion, and division artillery fire direction centers to receive the meteorological messages. The division and corps FSCC's also are equipped with this receiver. The corps artillery communications officer will prescribe specific times for the transmission of such messages by the division artilleries and the corps observation battalion.

Special Balloon Needed

A balloon must be developed which is capable of attaining an altitude of 102,000 feet with an ascension rate of 1,700 to 1,800 feet per minute. A standard US Air Force balloon which consistently attains an altitude of 100,000 feet is available through Signal Corps supply channels. However, this balloon has an ascension rate of only 1,000 feet per minute. The Army is developing a balloon which has the required ascension rate of 1,700 to 1,800 feet per minute.

Ballistic meteorological classes at the US Army Artillery and Missile School are being taught a method of determining wind data above the 60,000-foot level. A change to TM 6-242, Meteorology for Artillery, soon will discuss this method in detail.

With the increase in personnel and equipment, the division artillery meteorological section can provide the weather data required to predict fallout. Furthermore, improved meteorological equipment, presently under development, will be even faster and more accurate.

If you enjoy reading ARTILLERY TRENDS and it assists you in keeping up to date-- keep your Extension Course enrollment active to insure receipt of the next issue.

VEHICLE MAINTENANCE IN THE NEW DIVISION ARTILLERY

Captain Olen L. Tinnel
Department of Artillery Transport

To effectively employ artillery weapons, they must be moved rapidly into the proper position. Speed and mobility were important considerations in the development of the New Division artillery. Therefore, vehicle maintenance retains its significant and important role as a command responsibility.

The term "organization for combat" generally is reserved for use by the tactician and does not seem to be appropriate in an article dealing with maintenance. However, consider this predicament of the battery commander of a 155-mm howitzer battery of the ROCID composite battalion. His battery has been attached to the 105-mm howitzer battalion. One of his M5 tractor prime movers breaks down, and he must get new parts for it. However, the 105-mm howitzer battalion does not stock spare parts for vehicles not on its table of organization and equipment (TOE). Furthermore, it has tools to perform only the most minor repairs on track vehicles, and it does not have the supply manuals needed to procure parts. Add to this the fact that mechanics of the 105-mm howitzer battalion probably are not familiar with the M5 tractor, and it leaves only one solution to the commander--to take the vehicle back to the parent unit for repair.

In the New Division artillery, the battalion will operate intact, except under unusual circumstances. The battalion maintenance section will be nearby with the necessary spare parts, tools, and personnel. The maintenance problem will be greatly simplified.

Spare Parts Stockage

Because of the distance between the artillery battalion and the direct support ordnance unit, and the possibility of restriction of vehicular movement, the battalion must maintain the authorized level of spare parts.

In some cases, it will be practical to distribute the basic load of spare parts to the batteries. However, a battery should not be issued spare parts that it is not authorized to install. Neither should it be loaded down with more parts than it will need.

The organization and concept of employment of the New Division artillery is such that seldom would this procedure be necessary or advisable. It is not contemplated that the batteries of the howitzer battalions (direct support) will be detached or widely separated from the parent organization. Units of the rocket/howitzer battalion (general support) may be attached to a howitzer battalion for short periods. The situation would dictate whether they should be issued spare parts.

The howitzer battalion's spare parts will be maintained at battalion level; in the rocket/howitzer battalion a limited distribution of parts may be made to a battery temporarily. Close coordination is necessary between the battalions and the direct support ordnance unit to insure that the prescribed load list of spare parts includes the parts required to perform the maintenance mission. The result of the coordination will be simplification of the maintenance problem in this area.

Personnel and Equipment

The changes in personnel and equipment in the New Division artillery represent improvements over both the ROCID artillery and the Triangular Division artillery. Using the howitzer battalion (towed) of the New Division artillery as an example, table 8 compares personnel and equipment of comparable battalions in the ROCID artillery and the Triangular Division artillery.

Personnel and equipment	Triangular Division	ROCID	New Division (How Bn-towed)
motor officer (captain)	1	1	0
motor maintenance officer (WO)	0	1	1
total mechanics in battalion*	10	15	10
total mechanics helpers	7	10	4
total vehicles in battalion	137	181	80
tool sets:			
2d echelon #1 common	6	8	4
2d echelon #1 supplementary	6	1	1
general mechanics	10	13	14

*Includes senior track vehicle mechanic and wrecker operator

Table 8. A comparison of personnel and equipment of the howitzer battalion of the New Division artillery and comparable battalions of the ROCID artillery and the Triangular Division artillery.

Both the battalion and battery motor sergeant positions have been given increased rank. The battalion motor sergeant is now a grade E7 and the battery motor sergeant is a grade E6.

Mechanics' helpers now are authorized general mechanics' handtool sets. This permits either the mechanic or the helper to be sent out on a repair job, since both have the tools to get the job done.

The battery maintenance section is authorized a 2½-ton truck. This section is capable of carrying all of its authorized equipment and personnel and has a limited recovery ability because the truck does not pull a trailer.

The battalion is no longer authorized a battalion motor officer (captain, MOS 0600). His job is now an additional duty of the battalion S4. Furthermore, there may be a shortage of warrant officers for the motor

maintenance officer position, so in many cases, a lieutenant will have to fill the vacancy. Commanders may resolve this anticipated problem by sending selected junior officers to the Artillery Motor Transport Course of the US Army Artillery and Missile School. This will insure that qualified personnel are available to perform this task.

The maintenance system applicable to the New Division artillery is contained in TM 9-2810, August 1958, Preventive Maintenance, Supply, Inspection, and Training Procedures, Tactical Motor Vehicles. This system, together with the vehicles, tools, and personnel authorized in the TOE will permit adequate maintenance of the vehicles in the New Division artillery.

ORGANIZATION AND METHODS OF SUPPLY IN THE NEW DIVISION ARTILLERY

Selig A. Posner, Lieutenant Colonel, USAR
Department of Tactics and Combined Arms

Efficient supply management is directly reflected in the combat power of a unit. Good supply management cannot be overemphasized. This article discusses supply procedures and ammunition resupply as applicable to the New Infantry Division artillery.

Army supply procedures were substantially revised in 1958 to centralize the majority of supply functions at battalion level. Presently only active Army units are affected by this new system. The battalion and battery supply responsibilities and the supply procedures under the revised system are prescribed by Army Regulation 735-35.

Property books and supporting documents (informal accountability) are now maintained by the battalion supply section. Where practicable, separate batteries will be attached to battalion-size organizations for supply. Separate batteries, such as group, division artillery, and corps artillery headquarters batteries, will maintain their own property records as in the past.

Although property books and transaction files, in all but separate batteries, now are maintained by the battalion supply section, the supply responsibilities of the battery and the battalion remain unchanged. A local standing operating procedure (SOP) should be established to supplement supply regulations.

Supply Responsibility

Supply responsibility begins with the battalion commander. It is essential for both training and tactical purposes that the commander be assured as a minimum that authorized allowances are on hand or on requisition; that equipment and supplies are properly used, maintained, and accounted for; and that there is no accumulation of property in excess

of authorized allowances. Also, he must insure that supply records are maintained according to current regulations.

The S4 (battalion supply officer) normally is appointed property book officer and has informal accountability for all equipment and supplies. He is responsible to the commander for the proper functioning of the supply system.

The S4 is assisted by a warrant officer who is directly in charge of the battalion supply section (organic to the headquarters and headquarters battery). The supply warrant officer supervises the requisition and issue of all classes of supply except Class V (ammunition). He also supervises the maintenance of supply records and files. He is assisted by the battalion supply sergeant who also supervises the detailed work of the 3 clerks and the drivers assigned to the section.

The headquarters and headquarters battery of the rocket/howitzer battalion (general support) is authorized an ammunition officer. In the howitzer battalion (direct support), the ammunition section is headed by a sergeant (E6). Ammunition officer becomes an additional duty of the S4.

The Battery and Supply

The transfer of responsibility for property books and informal accountability to the battalion S4 has lessened the administrative burden on the battery commander. However, the battery must maintain hand receipts for property issued to it and many supply responsibilities still are retained by the battery commander.

The battery commander must: (1) have in the battery or on requisition all authorized equipment and supplies; (2) determine by inspection that supplies on hand meet required serviceability standards; (3) insure that hand-receipt files reflect the current status of all authorized items; (4) insure that all personnel are instructed in the care and maintenance of property; (5) insure that applicable publications are on hand; (6) account for lost, damaged, or destroyed property by initiating the necessary documents (statement of charges or report of survey); (7) insure that individual organizational property transferred with an individual is properly accounted for; (8) insure on transfer of any individual with property responsibility, that joint inventories by the individuals concerned (for example, old and new motor sergeant) are accomplished and that all discrepancies are promptly adjusted; (9) insure that physical inventories are taken at least every six months and appropriate entries are made on hand receipts. The table of organization and equipment (TOE) provides a supply clerk (E4) to assist the battery commander in supply matters.

It is a matter of local SOP whether the individual clothing and equipment records are maintained by the battery or by the battalion. In garrison or in field exercises it may be logical to give the battery this responsibility. In combat, however, battery paper work should be kept to a minimum.

Battery Buys Expendables

At those garrisons where there is a self-service supply center, the battery buys expendables within its credit allowance. Items obtainable are those normally authorized in a table of allowance (TA). Nonexpendable supplies are obtained through the battalion S4. Battery SOP will prescribe whether hand-receipts will be maintained in a central file by the battery supply clerk or maintained separately by the chiefs of sections to which the property was issued.

Service to the user is the basis for evaluation of a support activity. In this respect, the new centralized supply system is advantageous to both the battalion and the battery. The battalion commander has closer control and better overall supply management through the S4. The battery commander, relieved of property books and supply files, has more time for the command aspects of supply such as supervision and inspections. The supply personnel provided in the New Division artillery are adequate. This is particularly true in a combat situation since the unit is not concerned with additional work incident to post, camp, and station property.

The Basic Load

Firing batteries and the battalions have ammunition sections separate and distinct from the supply organization used for other supplies. The mission of the ammunition sections is to carry the basic load of artillery ammunition, both nuclear and nonnuclear, and to resupply the unit with ammunition as needed. The basic load (table 9) is, in effect, the tactical reserve carried by a battalion. It is established by the Department of the Army. Theater commanders are authorized to revise the basic load to meet specific requirements.

Weapon	Rounds per weapon	Total	Transported by: Battery	Transported by: Battalion
105-mm howitzer				
towed	200 x 6	1200*	720	480
self-propelled	200 x 6	1200*	960	240
155-mm howitzer				
towed	150 x 6	900*	504	396
self-propelled	150 x 6	900*	504	396
8-inch howitzer	100 x 4	400*	230	170
762-mm rocket (HJ)	4 x 2	8*	8	-

*May be revised by the theatre commander.

Table 9. Basic loads of artillery ammunition as prescribed by FM 101-10, Organization, Technical, and Logistical Data.

Battery	Rounds on prime mover: Each	Rounds on prime mover: Total	Carried by btry ammo sect*	Total per btry	Total weight (pounds)
105-mm howitzer					
towed	60	360	360	720	43,200
self-propelled (M52)	100	600	360	960	57,600
155-mm howitzer					
towed	24	144	360	504	56,448
self-propelled (M44)	24	144	360	504	56,448
8-inch howitzer	20	80	150	230	57,190
762-mm rocket (HJ)	-	-	8	8	48,480

*105-mm howitzer battery (towed and self-propelled) each: 2 trucks 5-ton, 2 trailers 2-ton

*155-mm howitzer battery (towed and self-propelled) each: 3 trucks 5-ton, 3 trailers 2-ton

*8-inch howitzer battery: 2 trucks 10-ton

*Honest John battery: 4 trucks 5-ton, 4 rocket trailers

Table 10. One method of distribution of the basic load within the firing batteries.

The battalion commander may prescribe the amount (percentage of the basic load) of each type of nonnuclear ammunition (high explosive, white phosphorus, illumination, etc.) that will be included in the authorized basic load. The force commander, or his designated representative, will prescribe both the amount and composition of a unit's nuclear load of ammunition. The basic load is carried by organic transportation--on the prime movers, in the battery ammunition section (table 10), and in the battalion ammunition section.

Tables 9 and 10 show that the ammunition trucks are not overloaded, nor are they loaded to the rated capacity. This permits operational flexibility. Thus, all, part, or none of the ammunition within the ammunition sections could be unloaded and trucks dispatched to the ammunition supply point (ASP) for replenishing.

The Honest John battery transports its basic load with organic vehicles without the assistance of the rocket/howitzer battalion ammunition section. The 8-round basic load is carried by four 5-ton extra long wheelbase trucks and 4 rocket trailers. Even though the battery transports its own basic load, the battalion ammunition officer still is concerned with the ammunition status and resupply requirements of the Honest John battery.

Ammunition Resupply

The continuous refill system, which is the Army's combat ammunition resupply system, has proven to be effective. The simplicity of one form (DA Form 581) for both requisitioning and reporting permits the rapid replacement of expended ammunition with minimum formality.

The division artillery commander recommends to the division commander the estimated quantities of ammunition needed to support future tactical operations for a given period. This estimate is known as the required supply rate. There is not sufficient knowledge of the overall situation to warrant estimates at battalion level. Required supply rates are based on such factors as the mission, experience, knowledge of enemy capabilities, and the proposed plan of action. The estimates are reviewed by the next higher commander, evaluated and possibly revised in the light of information available at that command.

Information as to the amount of ammunition available to the battalions is disseminated through G4 channels. It may be more, or less, than the required supply rate. It is dependent on theater stocks, anticipated resupply to the theater army, and the theater army commander's estimate of the situation. This information is called the available supply rate (ASR). The division commander may modify it, but he may not exceed, the announced ASR. The nonnuclear ASR is expressed in rounds per weapon per day for a stated period. The nuclear ASR is the authorized number of nuclear weapons for a stated period. The ASR may vary among units of the same caliber depending on the mission, targets available, and the division operational plan.

By making less ammunition available than the ASR calls for, the division commander may create "tactical savings" for emergencies, special missions, or other purposes. The ammunition "saved" is retained in the ASP for the period covered by the ASR. If not used by the end of the ASR period, the "saved" ammunition reverts to theater control.

Organic Transportation Used

The battalion uses organic transportation to draw ammunition from the ASP. The requisition, or transportation order (DA Form 581), is prepared by the S4 or the ammunition officer. Each requisition will bear the statements "Required to replenish the basic load" or "Required for immediate consumption" and "Expenditures are within the authorized available supply rate." The term "immediate consumption" means that the ammunition will be expended within 24 hours. The requisition must be authenticated by the division ammunition officer before it will be honored at the ammunition supply point. Distribution within the battalion will be in accordance with the unit ammunition supply plan.

The ammunition supply plan is as important as the fire plan to the unit. A good supply plan will include: (1) ammunition on hand in excess of the basic load, (2) the location of the ASP, (3) hours of operation of the

ASP, (4) the schedule for drawing ammunition, (5) the time and number of men required to load and unload ammunition, (6) restrictions on the main supply route, (7) ASR or ammunition to be expended if less than the ASR, (8) plans for battalion displacement.

Close adherence to supply procedures, and effective implementation of ammunition resupply plans are essential to the success and survival of a unit in combat.

NEW SMALL ARMS FOR THE NEW DIVISION ARTILLERY

Captain Charles M. Hunter
Department of Training Literature and Nonresident Instruction

The importance of the perimeter of defense for artillery units again was illustrated by the effective infiltration tactics employed by the North Korean forces in the Korean conflict. The artillery battery must be protected from surprise attack and infiltration.

Two new weapons that can better protect artillery units have been added to the small arms arsenal of the New Division artillery. The M14 rifle and the M60 machinegun will replace 6 weapons found in artillery units--the M1 rifle, carbine, Browning automatic rifle (BAR), .30-caliber machinegun, .50-caliber machinegun, and the .45-caliber submachinegun. Both new weapons fire the NATO 7.62-mm cartridge. To the unit, this means that 1 type of cartridge will replace 3 different ones--the .30-caliber cartridge used in the M1, Browning automatic rifle, and .30-caliber machinegun; the .30-caliber cartridge used in the carbine; and the .50-caliber cartridge. The supply lines will be reduced and the procurement of ammunition from other countries in the NATO forces will be possible.

The M14 Rifle

The M14 rifle (fig 29) is an air-cooled, gas-operated, magazine-fed, shoulder weapon. It weighs 8.7 pounds. Fully loaded, and with the sling, it weighs 10 pounds. The barrel is 22 inches long. The rifle, with the flash suppressor, is 44.16 inches long. The maximum range is 3,500 yards.

The M14 rifle is fired with a closed bolt. However, a major advancement is that the bolt remains at the rear when the last round is fired. The rifle is semiautomatic but can be made automatic by substituting a selector for the selector lock. The bolt, receiver, and trigger group on the M14 are basically the same as on the M1. They have been modified to accomodate the shorter, 7.62-mm cartridge and the 20-round box magazine.

The M14 was tested under arctic, tropic, and temperate conditions and proved to be superior to the M1.

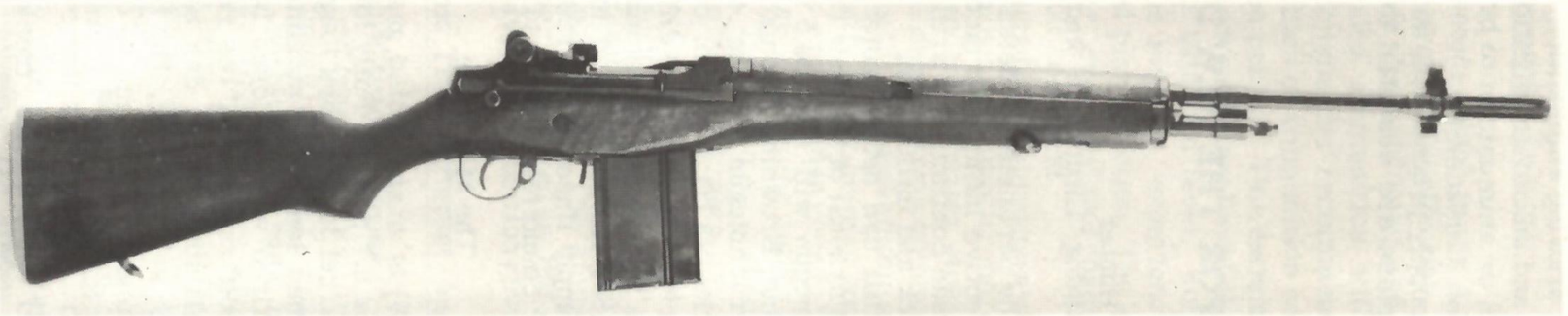


Figure 29. The M14 rifle.

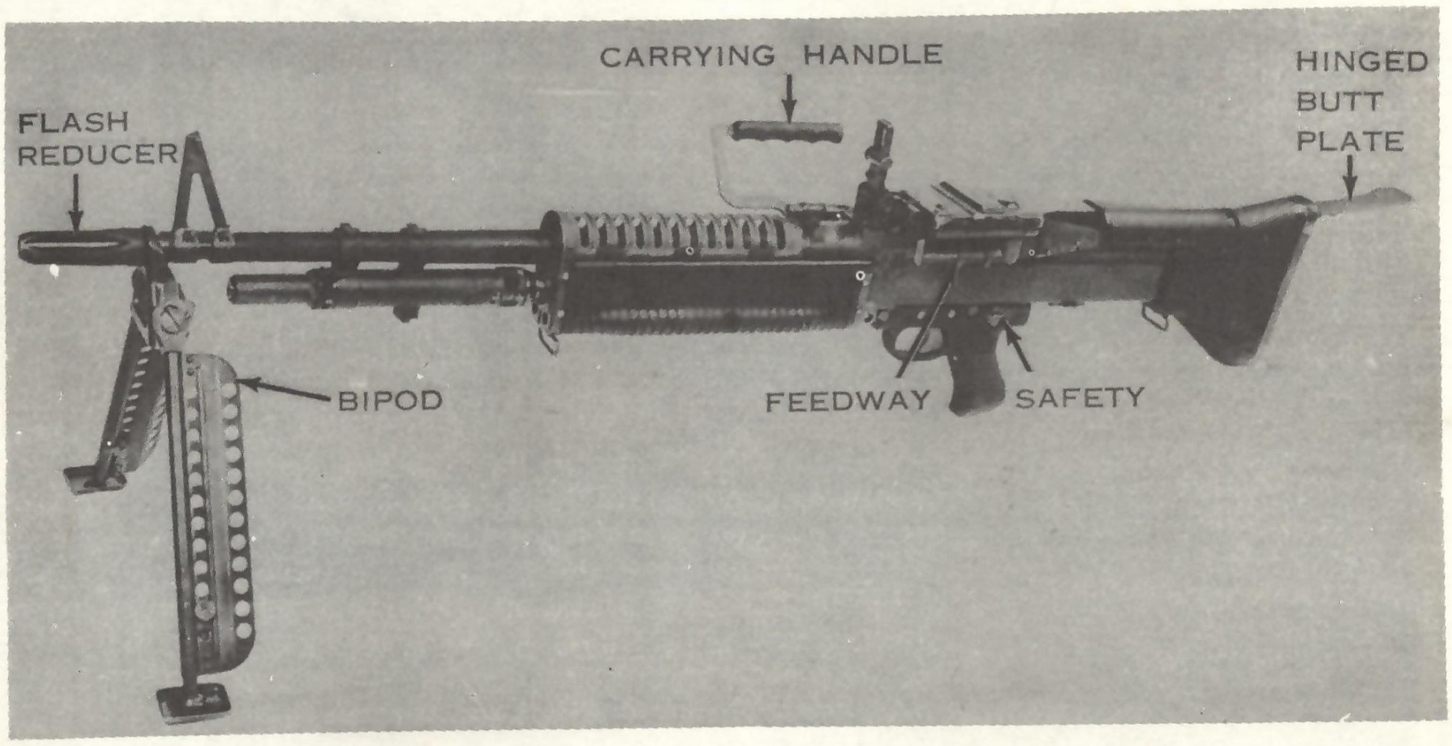


Figure 30. The M60 machinegun with its organic bipod and hinged butt plate.

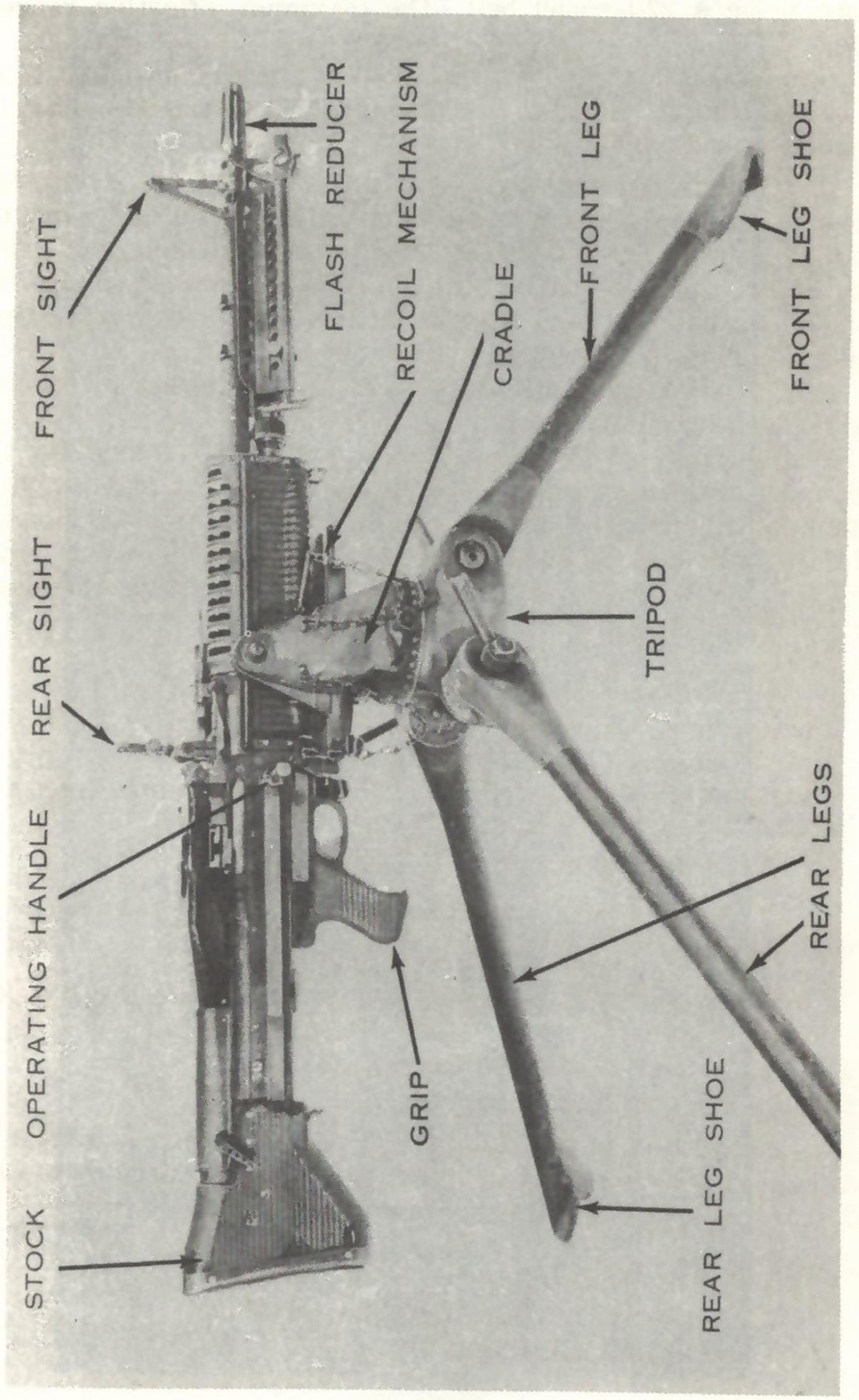


Figure 31. The M60 machinegun mounted on the standard M91 tripod.

The M60 Machinegun

The M60 machinegun is gas-operated, air-cooled, and belt-fed. It fires from an open bolt and has a cyclic rate of fire of 600 rounds per minute using a 220-round belt. The maximum effective range is 1,200 yards.

The M60 is equipped with a bipod and hinged butt plate. This version (fig 30) weighs 23 pounds. On the standard M91 tripod mount (fig 31), it weighs 48 pounds.

The "quick-change" barrel of the M60 is a major improvement. To change an overheated or burned-out barrel on the Browning machinegun, it is necessary to partially disassemble the gun, then reassemble it and adjust the headspace. With the M60, the barrel can be changed in seconds, and no headspace adjustment is necessary. A spare barrel will be issued with each weapon.

The 3.5-inch rocket launcher and the .45-caliber pistol continue to be authorized small arms for the artillery.

Small arms are vital for the protection of personnel and primary weapons of artillery units. The addition of the M14 and M60 to the New Division artillery, plus the use of the NATO cartridge, improves the artillery's small-arms system and increases its fire power, while it reduces the number of weapons needed and simplifies the small-arms ammunition problem.

A HISTORIC ARTILLERY FIRST

The first artillery round in the Korean conflict was fired by Battery "A," 52d Field Artillery Battalion, on 5 July 1950.

A SIGNIFICANT QUOTATION

"An organization does well only those things the boss checks."

General Bruce C. Clarke

Additional copies of ARTILLERY TRENDS are available at $0.15 each postpaid. All orders must be accompanied by check or money order payable to the Book Department. Address correspondence to:

Book Department
US Army Artillery and Missile School
Fort Sill, Oklahoma

TRAINING LITERATURE FOR THE NEW DIVISION ARTILLERY

The formation of the New Division artillery has necessitated changes to existing field artillery training literature.

A new division artillery field manual (FM 6-( )) is being written to include the organization, tactics, and employment of the New Division artillery. Also included will be data on the organization and employment of the airborne and armored division artilleries. This manual will replace Field Manual 6-21, The Infantry Division Artillery. The new manual is scheduled to be sent to the US Continental Army Command (USCONARC) in August 1959.

Field Manual 6-140, The Field Artillery Battery, September 1958, will be changed to provide information on the new organization. It also will include information on the concept of fire support and employment.

Field Manual 6-40, Field Artillery Gunnery, was published in April 1957. Change 1 is now at the Government Printing Office. Present plans call for rewriting this manual to include the new methods and procedures that will be used in the New Division artillery.

Field Manual 6-20, Field Artillery Tactics and Techniques, December 1958, is being changed to update the guidance concerning organization, command, and tactical control of the field artillery.

8-Inch and Honest John Publications

Presently four field manuals pertaining to the Honest John system are being written or revised. Field Manual 6-60, The Field Artillery Rocket, Honest John is being revised and is scheduled to be submitted to USCONARC in the summer of 1959. The tactical employment of the Honest John is covered in Field Manual 6-61, Field Artillery Missile Battalion, Honest John Rocket. Although this is a battalion manual, the tactical employment and concepts are applicable to the division Honest John battery. The revised edition of Field Manual 6-61 is scheduled to be submitted to USCONARC in the summer of 1959.

Two new Honest John warhead field manuals are being prepared. One will cover the XM24, XM25, XM29 and the other will cover the XM27, XM47, XM48, and XM49 warheads. These warhead manuals will be published using 6 by 9-inch looseleaf format.

A warhead manual also is being prepared for the 8-inch howitzer battery. Field Manual 6-( ) covers three different warheads--the nuclear explosive T317E1, the training T349E1, and the spotting T347. This manual also will be printed using a 6 by 9-inch looseleaf format.

Training Tests

Army Training Tests (ATT's) now available to troop units can be modified to test units of the New Division artillery. New training tests are being prepared.

Towed and self-propelled 105-mm and 155-mm howitzer batteries can be tested using ATT 6-13, Field Artillery Battery 105-mm ROCID, 13 September 1957. The test must be modified for the 155-mm battery. Also, the unit must be provided with the necessary survey, observer, and ammunition personnel.

Using a modified version of ATT 6-15, Field Artillery Battalion ROCID, both self-propelled and towed howitzer battalions can be tested.

There is no test available to evaluate the rocket/howitzer battalion. Using Change 2, (10 October 1956), ATT 6-1, Field Artillery Howitzer or Gun Battery, the divisional 8-inch howitzer battery can be tested. A new test is being written for Honest John units and is scheduled to be submitted to USCONARC in April 1959. It applies to both the Honest John battalion and the Honest John batteries. ATT 6-11, Field Artillery Battalion, 762-mm Rocket may be used until the new test is published.

Extension Courses

The reorganization of the infantry division and division artillery has affected approximately 60 percent of the subcourses offered by the extension courses division of the US Army Artillery and Missile School. The necessary extension course revisions will range from minor changes in materiel and artillery transport subcourses to major changes in tactical organization and communication subcourses.

The School instituted an extensive subcourse revision program in January 1959. Extension course students may expect to receive the first of the revised subcourses in early September 1959. The changes will not necessitate any student retaking a course already completed.

Subcourse numbers will not be changed, and the revised versions will be substituted as they are completed. Presently being rewritten are subcourse 52, Field Artillery Battalion in the Offense and Defense; subcourse 72, Division Artillery in the Offense and Defense; and subcourse 51, Field Artillery Battalion Staff.

Future issues of ARTILLERY TRENDS will announce the status and final distribution dates of extension course changes and revisions as they become available.

Don't wait-- sit down tonight and work that Extension Course lesson you put aside last month.

ARTILLERY

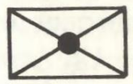
MAP

SYMBOLS

A revision of military symbols and abbreviations was necessitated by the Army's adoption of the combat arms regimental system and the program of modernizing Army terminology.

The symbols shown below are currently in use at the US Army Artillery and Missile School for instructional purposes. As yet these symbols have not been officially adopted by the Army. This information is published as a guide only pending revision of FM 21-31 or a directive from Headquarters, United States Continental Army Command.

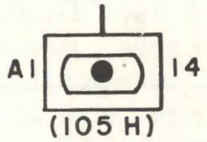
These symbols were part of an article in ARTILLERY TRENDS, October 1958. However, because of the New Division organization it is felt much of the information should be reprinted in this one subject issue.



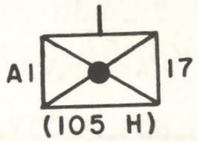
The basic symbol for a field artillery unit of an infantry division (or separate infantry battle group).

The basic symbol for a field artillery unit of an airborne division (or separate airborne battle group).

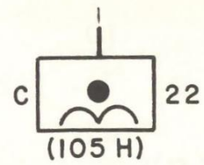
The basic symbol for a field artillery unit of an armored division (or separate armored unit).



Btry A, 1st How Bn (105-mm) (SP), 14th Arty. A field artillery unit of the armored division.



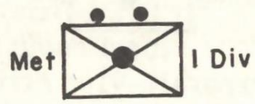
Btry A, 1st How Bn (105-mm), 17th Arty. A field artillery unit of the division artillery, infantry division.



Btry C (105-mm) (Abn), 22d Arty. A field artillery unit of the division artillery, airborne division.

Observation post, 1st How Bn (105-mm), 17th Arty.

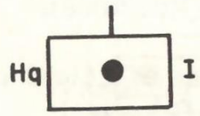
Note. Number of observation post may be shown below the base of the symbol if necessary.



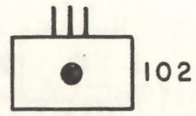
Meteorology section, Hq Btry, 1st Inf Div Arty.

Countermortar radar section, 1st How Bn (105-mm) (SP), 14th Arty.

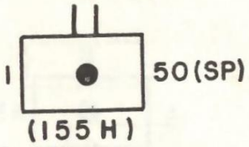
Corps and Army Artillery



Hq Btry, I Corps Arty.

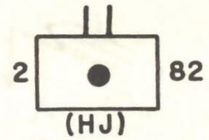


102d Artillery Group.

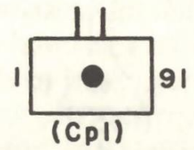


1st How Bn, (155-mm) (SP), 50th Arty.

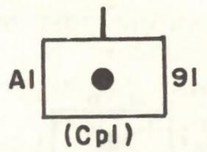
Note. This is a complete symbol. It shows the battalion number, the regimental number, the caliber and type of the weapon, the method of organic transport and the fact the unit is corps or Army Artillery.



2d Msl Bn (Honest John) (SP), 82d Arty.

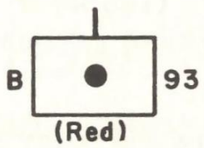


1st Msl Bn (Corporal), 91st Arty.



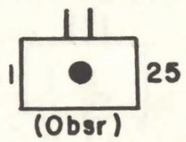
Btry A, 1st Msl Bn (Corporal), 91st Arty.

Note. This type of symbol is used when a complete firing battery of a field artillery missile battalion is located separately from the remainder of the battalion.

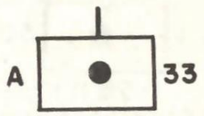


Btry B, 93d Artillery Gp (Redstone).

Note. The firing batteries of a field artillery missile group (Redstone) are designated as A and B.

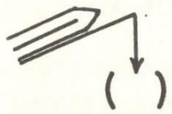


1st Obsr Bn, 25th Arty.



Btry A (Slt), 33d Arty.

Note. Battalion designation of parent battalion may be shown immediately to the left of the symbol if required or known.



Missile firing position (occupied). Use broken line if the position is unoccupied. Type of missile, if known, may be shown in parenthesis if desired. This symbol is useful in showing a missile launcher in firing position or in showing a firing position selected for a launcher. It is not suitable and should not be used to designate the location of a field artillery missile unit.

Concentration Symbols

Concentration symbol (circle 200 yards in diameter) and concentration designation used in fire planning.

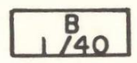
Note. AAC indicates that the concentration covers the first enemy artillery position located, and that the location has been confirmed.

Concentration symbol (see above) used in fire planning.

Note. MAHC indicates that the concentration covers the eighth enemy mortar position located, and that the location has been confirmed (FM 6-20).

Concentration symbol (see above) used in fire planning.

Note. Combinations of letters and numbers are used for targets other than enemy artillery and mortars. For procedure in designating groups of fires and series of fires, see FM 6-20.

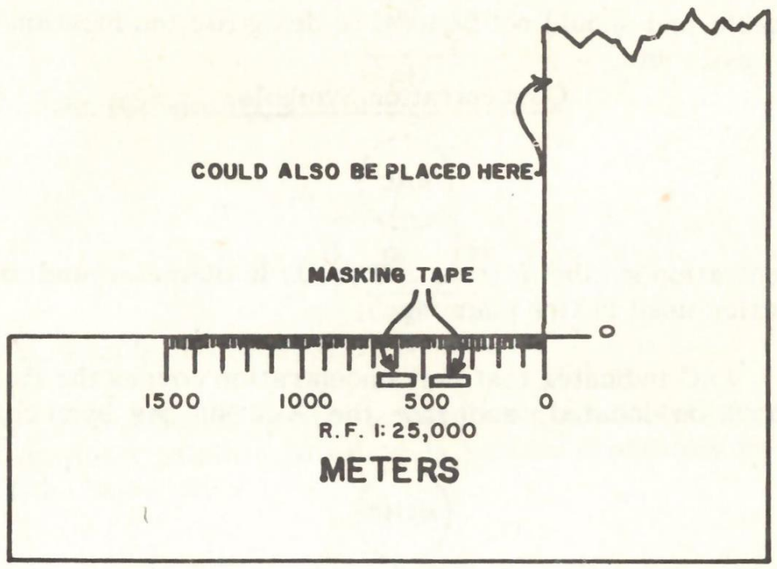


Symbol for a barrage (rectangle 200 yards wide by 100 yards deep) assigned to B Btry, 1st How Bn, 40th Arty.

Note. It is not necessary to number a barrage; a specific supported unit is allocated the barrage and a specific supporting unit fires it.

A GEM FOR THE FDC CHART OPERATOR

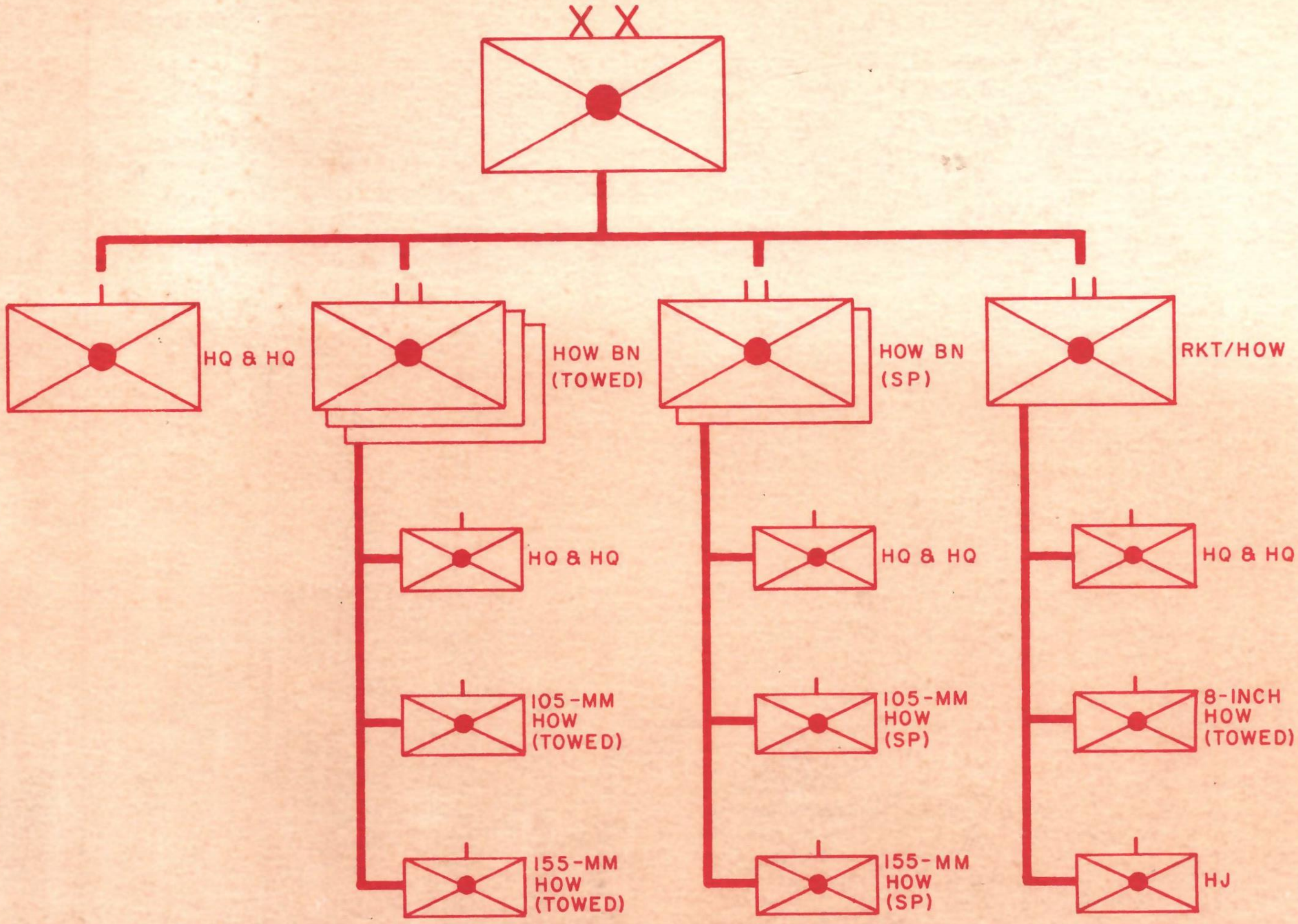
FM 6-40, Field Artillery Gunnery (Apr 57), states that tick marks on firing charts should be 150 meters long (as measured on the coordinate square's 1:25,000 scale) starting 40 meters from the plotted point. To assist chart operators and all others required to draw tick marks, two pieces of masking tape approximately 1/8 inch wide and 150 meters long



should be placed 40 meters left and right of the 500-meter mark on the coordinate square. Make sure the tape does not cover any lines or numbers.

--Submitted by Capt William A. Malouche
Dept of Gunnery, USAAMS

3255 ARMY-FT. SILL, OKLA.


XX
HQ & HQ
HOW BN (TOWED)
HOW BN (SP)
RKT/HOW
HQ & HQ
105-MM HOW (TOWED)
155-MM HOW (TOWED)
HQ & HQ
105-MM HOW (SP)
155-MM HOW (SP)
HQ & HQ
8-INCH HOW (TOWED)
HJ